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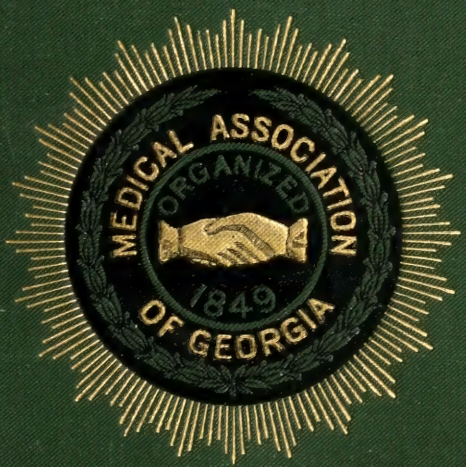

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OF

GEORGIA

SIXTIETH ANNUAL SESSION

1909

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"Resolved, That this Association shall not be considered as indorsing views of authors of papers published in connection with the Transactions, unless definitely so indorsed in the Proceedings of the Association.

"Resolved, That the above resolution appear annually upon the title-page of our published Proceedings."

Transactions 1873.

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OF THE

Medical Association of Georgia

Sixtieth Annual Session

Macon, Ga., April 21-23, 1909

Prayer—By the Rev. T. D. Ellis, D.D.

ADDRESS OF WELCOME.

HON. T. E. RYALS, MACON.

Mr. President and Members of the Medical Association of Georgia: The duty has been assigned me this morning of extending to you a hearty welcome from the city of Macon, from the physicians resident here and from the citizens of this community. We are glad to welcome you on this day of your sixtieth anniversary. You have now attained an age which entitles you to be called venerable. We wish you well on your safe arrival at the sixtieth milestone; may you as happily pass many other such milestones along the way. The physicians in Georgia have played no small part in the history of this State. Among famous Americans it has been suggested by you with great propriety, been approved by the Legislature of the State, and has, I understand, been approved by the Board of Judges, that a Georgia physician is a suitable one among the very few to be chosen for the National Hall of Fame—Dr. Crawford W. Long. Many of the revered names on the roll of your members, past and present, have been and

are to-day those of men who have largely won the esteem and affection of this community and whom it is our pride to claim as citizens. There are ancient precedents for this reverence we bear the physician. I believe it is to the cultured Greeks that we look for the earliest traditions regarding your profession, at least for the traditions concerning theory and practice, which have most to do perhaps with the moulding and shaping of the course of modern medicine. It is to the Greeks, as I understand it, that we owe in large part the nomenclature of the science of medicine as known to-day, and doubtless it is due to this that your prescriptions are still written in what is Greek to most of us.

If I recall aright from my schoolboy readings of the Homeric poems, it was the two sons of Aesculapius who were the first representatives of medicine and surgery. It is not difficult for us to suppose that they examined the tongue and felt the pulse and listened to the chest in their search for hidden truths. Aesculapius, the father, was afterwards deified, received divine honors, not so much for his own attainments as for those of his sons, and it still happens that those who accomplish results do not always receive the glory. Several temples were erected to Aesculapius and to these the injured and the sick were brought for treatment. The patient would be stretched on a couch and placed near the shrine and was then put through the process of incubation, as they called it, before being permitted to have the proper course of treatment. If the patient died nothing was said about it; if he got well a record of the cure was engraved on a tablet of stone and placed on the wall of the temple, and we are seriously told, gentlemen, that from this arose your custom to-day of recording cases.

Hippocrates is another instance of the great honor shown by the Greeks to the physician. He was so highly esteemed by them that he was called Hippocrates the Great, and if all the works that have been accredited to him were really written by him, his contributions, not only to medicine but to science

in general and to literature, were indeed wonderful and entitled him to be classed among the greatest of the Greeks.

The friends of old Aristotle, author of the science of logic, claim that he was raised as a physician and actually practised medicine. It is undoubtedly true that old Pythagoras was a practising physician and combined with his other studies that of medicine. I might enumerate a great many other instances of the honor the Greeks accorded their physicians; suffice it to say that from the time of Hippocrates down to the time of Galen the representative men in medicine were highly honored. These cultured Greeks regarded their doctors as their men of learning. They respected their learning; they respected them for their learning, and they respected their learning because it was applied to the subject of the greatest possible importance, the extension of life and the relief of suffering. I am glad to see that the students of medicine in modern times have kept pace with the students in other branches of knowledge. No less an authority than Dr. William Osler has declared that the average life of the English speaking people in the past centuries has been doubled. He assigns for this three causes: advancement in physical comforts, medicine and her handmaidens, hygiene and surgery, and in the mitigation of pain and suffering medicine, he says, stands incomparably first. This is a very bold assertion. I am not prepared to demonstrate its truth, but I believe there is much truth in it. If it be true only in part and medicine be only a factor, the subject of medicine is worthy of continued study and the results of your study are worthy of our highest respect.

The specialist in medicine, as in other branches of science, is accomplishing great things to-day. This specialist is no longer the "fit doctor," nor even the "fever doctor" of the past: he is no longer an ignorant parasite, but a well-trained man, grounded in general medicine, who simply places his knowledge and work to the study of a limited subject. The point where we lawyers come most in contact perhaps with you doctors is in the study of insanity and we believe that

American alienists stand to-day in the front rank of the alienists of the world. From the time of Dr. Rush down to the present we have always had great doctors and great teachers on this subject. Our great governmental institutions demonstrate the truth that under our form of popular government, the people, when they understand from you the needs and necessities of the occasion, will respond thereto very quickly. They look to you for facts and for information: they must rely on your knowledge and advice. When people are menaced by disease it is simply axiomatic to say that it is proper and right for the government to extend its protection, and just here I desire to say that when the bills providing for an appropriation to begin the fight against tuberculosis in Georgia were submitted last summer to the Legislature of which I had the honor to be a member, it came at a time when the funds at our disposal had been pretty well distributed and there was practically nothing left to appropriate. It was not due to any lack of sympathy on the part of the members of the appropriation committee of the House, nor to any opposition in the Legislature, that the small sum of twenty-five thousand dollars was appropriated. The appropriations are made at the first session. This bill was reached in its order late in the second session. The people of Georgia have suffered from poverty but they are not so poor to-day. The State of Georgia tries to lead in its munificent appropriation for common school education. It to-day annually assigns the sum of two million dollars for this purpose. A State that can and is willing to appropriate that great sum for the common school education of its children surely will not be content to appropriate only twenty-five thousand dollars to the protection not only of her children, but of her men, women and children from the insiduous attacks of tuberculosis. Education, my friends, may be a panacea for many ills, but it in itself confers no immunity from disease. The advancement in physical comforts, the extension of means of travel and communication, the annihilation, as it were, of time and space, are bringing more and more into direct contact

all the peoples of the world. This inevitably tends to the communication of disease. Germs of disease formerly unknown to us are now easily and quickly transmitted from the most distant people and from the most distant climes. Modern advancement, it is true, has modified our conveniences, but it has also increased our responsibilities and brought to us new problems for solution. The revelations of recent times are due largely to the conception of the germ theory by Pasteur and Koch and this has not only already brought inestimable benefit but it seems also to hold the rich promises for the future. I am satisfied that the day is coming when for every infectious germ you will have discovered and will be able to successfully apply its bacterial antidote.

We bid you God speed in the great labor that lies before you. May your sessions prove happy and profitable.

RESPONSE TO ADDRESS OF WELCOME.

DR. THOS. J. CHARLTON, SAVANNAH, GA.

Mr. President and Members of the Association, Ladies and Gentlemen: When invited to respond to this address of welcome I hesitated to accept feeling keenly my unfitness and now that I have listened to the eloquent words of the Honorable Mr. Ryals I feel more than ever my absolute incompetency. I appeal to your indulgence for I lack the ready speech to express the feelings that stir my breast.

Time was, happily past, when the doctor was a fit subject for jest. Montaigne, the celebrated essayist, wrote that "He had no use for doctors and that the only member of his family that ever did, died young." La Sage in Gil Blas makes his hero relate how when taken suddenly ill in an out-of-the-way village he made a rapid recovery because there was no doctor in the place. To-day conditions have greatly changed. The doctor occupies a position of high honor in the community and to be worthy in addition to a full knowledge of medicine he must possess courage, culture and charity; courage to hold

to the right and to admit error when to do so seems a weakness; culture that through the knowledge of the recording history of medicine he may develop its truths; charity that he may be considerate and tender to the weak.

Man is by nature a social being; he thrives best in the presence or company of his fellowmen. Now it is a custom of our Association to meet together each year in order that we may interchange ideas, cultivate good fellowship, and advance the cause of medicine and the good of our members and our patients. The cordial welcome which has been extended to us by the people of Macon shall be an inspiration to us to urge us on to greater achievement. The men and women of Macon have ever possessed in a high degree those great virtues which have made such a name for our glorious State of Georgia. My heart thrills when I recall how Macon in times of pestilence opened wide her doors to the stricken ones and bid them welcome.

On behalf of the Medical Association of Georgia I accept the kindly welcome which you have extended to us. We are glad to be with you and the inspiration of your welcome will greatly aid us in the work which we are here to do.

THE PRESIDENT'S ANNUAL ADDRESS.

BY THOMAS D. COLEMAN, A.M., M.D., AUGUSTA, GA.

When the first roster of our republic was called, Georgia was the Thirteenth of the Confederated States; instead of this being a hoodoo, or handicap, it has seemed rather a talisman, for our State has always been in the forefront of all that has stood for our nation's betterment. She has through force of merit been properly styled the Empire State of the South, and throughout the early and late struggles of the republic, her sons have played an important part in our country's development. In our nation's history the names of Oglethorpe, Hall, Gwinette, Walton and others shine resplendent; in invention we have not been laggard; and the first railroad in

America was operated from Augusta, Ga., to Charleston, S. C., and the invention of the cotton gin by Ely Whitney was made in this State; in the realm of poetry, we turn to the names of Paul Hamilton Hayne; Richard Henry Wilde, Sidney Lanier, and James Ryder Randall. In literature one finds the authors of Major Jones Courtship, Sut Lovinggood and Uncle Remus, each different and meritorious in its sphere; in statesmanship Robert Toombs, Alexander H. Stephens and Henry Grady, occupy positions of which the whole nation is proud; and in medicine from the list of humanity's benefactors, I may select, Long, Batty, Dugas, Campbell, Westmoreland, and many others if the time permitted. A rich heritage has been bequeathed to us and posterity has a right to demand and expect nothing less. However, much we might feel inclined to follow other courses, for the present our deliberations carry us in strictly medical lines. The history of the world bears testimony to the fact that all originators of reforms must bear their share of ignominy and misrepresentation, and medicine is no exception to this rule. This very fact has retarded progress in our profession to such an extent that until comparatively recently, the medical profession, as a composite working body has been jeered at by the unthinking, and unheeded by those who should know better. Individual physicians have gained recognition and been revered, and their judgment respected, but the profession as a whole has to a great extent been ignored and disregarded in much of legislative enactment, which has had for its object only the public good. It is distasteful and humiliating to us to feel the weight of influence which the proprietary medicine association of America, and that which some disgruntled and discredited members of the profession can bring to bear in their effort to block salutary legislation, and yet we feel that future generations will bless us for the passage of the pure food law, and for our work in making proprietary dealers label their wares correctly. It is discouraging and evangelling to see how the Christian Scientists, Osteopaths and others of their like thrive, not at our expense, as the simple minded

seem to think, but at the expense of the people and with the sacrifice of human life. It is a curious phase of human nature that in critical illness, the physician is called upon even beyond his strength to alleviate suffering, and prolong life, and yet in what the world calls trivial, and the chronically sick, disease is trifled with, fakirs are employed and encouraged, and reputable physicians put at a disadvantage, for they are called upon to remedy the evil effects of time, ignorance and disease. Another phase of the same human problem is why one should feel that the unknown and irresponsible "healer" is essential to cope with his ailment; he may know that his family physician is a more or less "perfect and upright man, fears God and eschews evil," he may love him as a friend, and respect him as a neighbor, and yet he feels in his heart that he must look to some "wise man from the East" to cure his disorder.

Fortunately for the human race wisdom has never been cornered in the East, or anywhere else for that matter, and those who are mislead by this belief, usually end by giving up both their means and their bodies, when they deliver themselves into the hands of the medical fakir.

If I can impress one fact on the minds of the people I shall feel that this hour has not been spent in vain. Most men otherwise unprejudiced will admit that the average physician is a man of exemplary habits, sound integrity and more than ordinary industry and ambition. I think these points will not be gainsayed by any. Once admitting them we must confess that all things else being equal he must know more concerning our ailments than any chance comer or healer, and yet he gladly gives a fee to the latter, that he would consider extortion if charged by his regular medical adviser. This bias of mind is to be deplored for its works an injury to the people greater than to the physicians. As has been aptly observed an underpaid profession is a menace to the public. While the verdict "well done" and the "crown of life" are coveted here, and for the life hereafter, these do not meet the necessities of our environment here. The every day physical

needs must be met without undue friction, else the higher spiritual and mental help can not be expected to be forthcoming. These inconsistencies, and incongruities while discouraging, may in large measure be disregarded or discounted, for the reputable practitioner is slowly but surely having his worth recognized. I shall not here attempt to reconcile that attitude of human nature which makes it seem a blessing, nay even a privilege to a man to pay a lawyer $5,000 to $10,000 or more to save a piece of property, and yet balks at a bill of as many hundred for a doctor to save the life of himself, his wife or one of his children. I am optimistic enough to believe that these things will right themselves in time. It has been forcibly observed that a "virtuous will is almost omnipotent." Since none of us possess great riches, unless we marry them, and all of us may enter claim for a virtuous will, it seems that even the attitude of an unresponsive public can not keep us out of our own. While the chasing of this ideal is attractive, it is in like manner wise for us to come down to earth and weigh conditions as we find them. It is a matter of pride for us to learn that throughout all history our profession has been linked with that of the priesthood; we must also feel reverently grateful and deeply appreciative that of all the callings of men our Saviour was referred to as the Great Physician, and yet we must admit that up to the present time the physician as a factor in the affairs of men has not received that recognition to which he is and has been justly entitled. If this is true, it is of moment that we inquire why. It is first; viz. because the practice of medicine is not and can not be an exact science, and, second, because we have not and do not accord to each other that measure of praise that is due virtuous work. The former we can not change or correct, the latter is at our command. Medical organization is the keystone in the arch, and let me repeat, not for our benefit, though it may and should accrue, but for the uplifting and protection of the race. With a properly organized medical profession, laws can be enacted which will keep pure our water supplies, prevent the adulteration of our foods, banish

infectious diseases, and lengthen the span of life. By medical organization I do not mean to imply a trust, or trade union, or anything akin thereto; but a united profession which carries on its banners two sentiments, the banishment of disease and the betterment of mankind. When these are accomplished the physician can and will, if need be, seek some other field activity; or if this era should usher in the millennium, he may like that other hero, "Wrap the drapery of his couch around him, and lay down to pleasant dreams." Although the early history of medicine is shrouded in mystery and superstition, it has always been accorded a degree of respect. When we turn to the history of the Hebrew race as early as 1700 B. C., we find that on the death of Jacob in Egypt, "Joseph commanded his servants the physicians to embalm him, and the physicians embalmed Israel and forty days were fulfilled for him, for so are fulfilled the days of those that are embalmed."

The hygenic laws of Moses as recorded in Leviticus seem almost prophetic in their far-reaching wisdom, and many of them are accepted as authoritative unto this day, in exemplification of which I need only mention to you the rules of conduct of man and wife, and the selection and examination of articles of food that may be considered wholesome, etc., etc.

It is believed that the hieroglyphics which bear silent testimony of the ancient Egyptians, were not employed in speech by the common people, but were used only by the kings, princes, priests and physicians. Among the Oriental Indians, only Priests and Physicians learned Sanskrit, and it is not amiss to add here that the word doctor which every medical student longs to see attached to his name, and the dignity of which we older men strive to maintain, means Teacher. For purposes of brevity Chinese Medicine although tracing back more than 2600 years before the Christian era may be omitted. One of their methods, however, we might well adopt: They pay their doctors for keeping them well, and are thus the earliest patrons of Prophylactic Medicine.

Among the Greeks 200 years before the Trojan War, Mil-

anhfus is said to have cured the King of Argus of Impotency by the use of the rust of iron. Aesculapius, the son of Apollo, was the most conspicuous figure of his age. The homage paid him amounted to veneration, and temples were erected in his honor throughout Greece and the Roman Empire. His cures were so numerous that Pluto, the God of Hell noting the diminished number of arrivals to his dominion complained to Jupiter, who destroyed Aesculapius, which event caused a certain wit to remark that this accounts for why the modern disciples of Aesculapius refrain from performing prodigies (miracles).

Throughout all ages medical knowledge has been imparted by word of mouth, and even the discovery and perfection of the art of printing has not destroyed this time-honored custom. In primitive times a towering intellect gathered his disciples about him and taught them. The same sort of process goes on in our schools to-day, and although the day and age of inspiration and geniuses may have passed away, in spite of the development of instruments of precision and laboratory technique the need for personal instruction and contact is still felt and met. Our medical gatherings are schools of post graduate instrution, for the physician though no longer a boy, must always be a student. Who is not, is a disgrace to a noble and justly honored profession. In all civilized countries, the ranks of the reputable, properly accredited practitioners have been swelled to such proportions that their numbers reach into the thousands. In the United States alone one hundred thousand active practitioners of medicine is not an excessive estimate—what a fund of information do they not embrace—what a splendid band of philanthropists do they not represent battling throughout the tedious hours of the days and silent watches of the nights, to banish disease and diminish the sum total of human misery. With such a membership as our profession represents it is evident that only a small fraction of these, it matters little how important their message, can gain a hearing at the annual gatherings of the parent body the American Medical Association. The same

applies to our State organizations. At the meeting of the American Medical Association in St. Paul, the working basis of our present splendid medical organization was projected on lines similar to those which have cemented this government into the most splendid representation of civilized government in the world—"a government of the people for the people by the people." While admitting that it has defects as all human systems do, the leaders in our profession have thought that our Medical Union could not be better planned than on a similar system of national government with States rights and privileges. It has gone even beyond our national policy in eliminating politics, and not allowing a member of the House of delegates to be nominated as President of the Association.

What member of our House of Representatives or of the Senate would enter either august body if he felt it debarred him from consideration for the presidency—a hope which every boy has drilled in his somewhat indifferent ear at his mother's knee. On these lines, therefore, with some improvements let us hope, has medical organization been projected and perfected. We have our local organizations in our County societies which meet monthly and some instances weekly. Our district societies similar to and formed from the congressional districts, which meet one or twice a year. The wisdom of this plan of organization is now doubted only by a few, and of these like all other obstructionists, I have never heard from them a single working plan offered that was an improvement. Our own State has benefited by it to such an extent that its membership is more than doubled, its power as a working body wonderfully increased, and its scientific deliberations, enthusiasm and zeal have reached a higher plane than ever before recorded in the history of medicine in Georgia. The county societies are with a few exceptions holding their meetings regularly, and co-operation, brotherly feeling and general improvement are resulting. The district societies have all met in annual meeting, some of them twice a year, and the character of papers presented before them would reflect credit on

any portion of our common country. In this connection too much praise can not be given my friend, Dr. E. C. Davis and his band of councillors for their untiring and sagacious work, much of which has been at the sacrifice of time and money as well. The end has justified it all however, and the splendid organization of our State to-day are theirs and ours to enjoy. Every district in the State is now organized and the sum total of their results is good. The problems before us are many. The tuberculosis problem, malaria, hook-worm, pellagra, the hygiene of the schools, public buildings, homes and a host of other subjects cry out for our attention, so that none who cares for the opposite need fear death through ennui or lack of work. Verily the "harvest is ripe but the laborers are few." If I may be allowed one word of criticism without reproach, I shall appreciate it. The subject is so broad that I can not discuss it, I can only mention it. From a broad standpoint, I can not but say that generally speaking the rank and file of the profession do not sufficiently estimate the value of contact with others working in their own field. To listen to or observe a blunder is often more serviceable than to hear a new fact or witness an improved surgical technique. You are derelict when you fail to attend your county organization meetings, you are laggard in your duty to your county when you do not take part in your district meetings. You are blameworthy when you neglect your State conventions, and you impede medical progress when you fail to take part in the national annual meeting, which bring together the cultivated and working minds of our guild. All can not attend, but those who can, should. I have had it sounded in my ears repeatedly that Southern men do not get recognition, and on the other hand, I have had Northern friends ask me why don't more of your good Southern men take part in our meetings? I ask you why don't you, and I beg to suggest a bit of advice from Holy Writ, which applies to your local as well as national organization. "Neglect not the assembling of yourselves together."

MEDICAL ORGANIZATION.*

BY M. A. CLARK, M.D., MACON.

"One of Matthew Arnold's clear thinking Yankees has said, with epigrammatic brevity, that whenever three Americans get together they organize." It is evident that he did not refer to the medical profession.

According to the earliest records, the first association of physicians into a medical society was in Boston in 1735. A report of an operation for stone in the bladder on a boy of six years was made to this society in November, 1741. There is no further record of its existence.

The Philadelphia Medical Society was organized in 1765, but enjoyed only a short life.

The oldest medical society existing at the present day was founded in June, 1766, with a membership of sixteen. I refer to the New Jersey Medical Society. Fifteen years later the Massachusetts Medical Society was organized with a membership of thirty.

The first medical organization in the South was in South Carolina, but so far as we can ascertain, it was of short duration. The first permanent society was the Georgia Medical Society in 1804 at Savannah. This society still exists, and is one of our best organizations.

Except the Maryland Medical Society, the first state organization in the South was effected in 1846 under the title of the Medical Association of Alabama. This association was reorganized in 1873 so that it should consist of component county societies, but the last county was not organized into a society until 1888. This is the most complete and most powerful medical organization in America, and I do not think that I would exaggerate to say, in the world. Fully ninety-two per cent. of the physicians of the State belong to the society, and through its committees it controls both the boards of medical examiners and of health, and the county societies are the county boards of health. This is a most striking

*President's Address omitted from transaction of 1908.

example of what may be accomplished by the united and persistent efforts of a faithful few.

Packard, in his History of Medicine in the United States, says that our own Crawford W. Long presented a full report of his first use of ether as an anesthetic in surgical operations to the Georgia State Medical Society in 1842, but we are unable to find any other reference to such an organization. Our association was founded in 1849 under the name of the Medical Association of Georgia, and was reorganized in 1905.

Under the original plan of organization, any reputable physician of the State, when vouched for by two members of the Association and approved by the board of censors, became a member and attended or took part in it if he felt so inclined. From year to year we were able with no little effort to get about enough new members to equal the number of delinquents. Hence, the membership did not increase, nor did the interest in the work grow to any extent. At the time of the reorganization, in 1905, the total membership was six hundred and twenty-five, and there were no component county nor district societies.

The present plan of organization provides that the State Association shall consist of component county societies, and the door of entrance must be the county society. In other words, the Medical Association of Georgia is an aggregation of county societies, and depends wholly upon these societies for its existence. This is a wise provision, for in every locality there are matters of interest and importance to the profession of that vicinity which can not be properly dealt with by the State society meeting annually, but must needs be left to the management of the county society. However, the State organization can aid the local societies by devising plans and helping them to execute these plans.

The existing plan has arranged two bodies, a legislative and a scientific. The legislative body is the business branch of the Association, and is composed of delegates from each county society, every society being entitled to at least one delegate, and those having a membership of more than fifty,

being allowed a representative for each fifty or fraction thereof. This constitutes the house of delegates and meets on the afternoon before the scientific session. All business and matters pertaining to the good of the profession and the public generally are considered in this body. That we may be democratic in the full sense, the deliberations of this session are submitted to the general body for its approval. Also, the several delegates on their return to their respective societies should make a complete report of these meetings, that all may feel that they are an integral part of the Association and that it is as much theirs as if they had taken part in the proceedings.

The scientific or general session is composed of all members of the county societies in attendance and devotes the three days in session to reading and discussing scientific subjects. Being relieved of the business part of the association, much more attention is given to the consideration of scientific topics. The short time this plan has been tried has fully convinced us of the wisdom of its adoption.

Now, gentlemen, let me remind you, and I beg to make it emphatic, that the county society is the cornerstone, the pillars, the whole foundation, yes, the framework, top, bottom, every part of the Association, and without the county societies there can be no State Association. Whatever affects one affects the other, "useless each without the other." I have frequently heard some of the physicians, especially of the smaller towns and villages, say, that it is well to have a State society, but it is simply impossible to have a county society. We must rid ourselves of this erroneous notion before we can have our organization complete. Just as the brain is composed of multitudinous little cells so arranged that they work in unity, each depending upon and helping the other, and the aggregate of all their work constituting the thought, the will, the mind of the individual; so must the medical men of Georgia make up the working element of our Association, and all dependent upon each other must be so organized that the very best effort

of every member is in harmony with that of the other, and all together creating the great whole, our beloved Association.

In order that these county societies may be organized and encouraged to live and thrive, it has been deemed wise to have some one whose duty it is to visit them from time to time, at least once yearly, and renew their interest and foster their growth. After mature deliberation, it was thought best to have a representative from each Congressional District to look after the welfare of the counties in his respective district, and the Council was created, consisting of eleven members. They also constitute the Board of Censors and Finance Committee of the Association.

The duties of the councilors are by no means easy. To faithfully fulfill these duties, one must be wise, prudent, tactful, energetic, and ready and willing to make any sacrifice for the good of his profession. It requires a vast deal of thought and study, and no little financial loss on account of absence from the duties of home, but the results, the benefits to the profession and ultimately to humanity, more than repay the true, big-hearted, broad-minded, soul-loving physician. Gentlemen, in choosing your councilors, you should at all times select the very best men in the Society, those most adapted to the work as well as willing to devote the time and energy to it. Every one who takes up the work of organizer and does that work well, becomes a better, broader, and more useful man, for he can not organize others without first becoming fully acquainted with and mastering self. No member of this Association should allow himself to seek this high office nor should he ever accept it solely for his own personal aggrandizement.

Fellow members of the Medical Association of Georgia, let me urge you to always select for your council as well as your other officers the men most adapted to the places, and never allow yourselves to be controlled by personal or selfish motives.

It has been no easy task to organize the county societies we now have, and, as has already been said, it is even more arduous to keep them organized and to get them to act. Allow

me to recall to you a few of the difficulties as they appeared to me as one of your organizers.

The greatest obstacle to successful organization and the one most difficult to overcome is the petty jealousies among our physicians. How sad, but how true! How frequently we find two good men of the profession so jealous of each other that they do not speak to the other in passing, and rarely allow an opportunity to pass without saying some little mean thing about the other in the presence of the laity. Some live long and fairly useful lives and die without any fraternal feeling toward their fellow laborers. By thus acting they have made their duties more onerous and have degraded their high calling.

If you please, go to any village or town of the State, especially where there has been no medical society, and ask a physician about one of the lawyers or any other layman, and he will gladly recall his virtues and ofttimes magnify them. Now, ask him of his fellow physician, and he will either condemn him outright or, worse still, "damn with faint praise." Is it not strange, passing strange, that such noble, charitable, self-sacrificing men should be so thoughtless of each other and so regardless of the others welfare? There is not a grander, bigger hearted, more charitable body of men than the medical men of Georgia, yet how prone at all times to speak slightly of each other and to make insinuating remarks about their brethren, thereby bringing the entire profession into disrepute. We can never command the respect due us by the public so long as we allow this grave fault to be so conspicuous.

Go to the legal fraternity and learn of them, thou medical man! Lawyers often abuse each other in the court room, the one vying with the other in the use of seathing epithets. After the adjournment of court, they go out together laughing and jesting as if nothing unpleasant had occurred. Let a doctor make a slighting remark of another in that august presence, and they are henceforth enemies, and peradventure may attempt to outdo the notorious American of pugilistic

days. How the laity smile and the tongues of the gossippers wag, and still the doctors go on thus acting forever.

Now, wherein lies the difference? The lawyer is not better than the doctor—I do not think he is as good. It is because the legal profession are thrown constantly together and are enabled thereby to become well acquainted with their fellows, and there arises a bond of sympathy for each other as a result of this association.

The physician after receiving that priceless piece of sheepskin, alias parchment paper, chooses a location to practice his profession. He is young, hopeful, self-confident, and otherwise proud of self, but distressingly ignorant of the courtesy due from one physician to another, not having been taught on this important subject. Often he has never heard of the Code of Ethics, much less learned of its teachings. It is truly the formative period of his professional career, and how he is received by his professional brethren and treated by them makes or mars a useful life. How often have you heard it said that the old doctor has no sympathy nor respect for the young disciple of Æsculapius; and when we recall some remarks that have emanated from some good old Nestors of the profession, we are forced to admit that this must be true. It is no wonder that so many of us draw ourselves up into our little shells and keep so inactive that we are weighted down with the moss of jealousy and hatred and are soured from the lack of communion with our fellows. Too well do I remember the reception accorded me when I first located in a little village of Georgia, and I shudder when I think of the influence it came so near having over me. Fortunately, I began early to attend the Association, and was there directed in the proper way and encouraged to cultivate the true professional spirit.

Let me beg you of mature years, and of much experience in the vicissitudes of life, to extend a helping hand, speak an encouraging word, give a friendly nod in passing to the young doctor in your midst and, above all, to refrain from saying anything that will reflect upon him in any way. In

helping our younger brethren to get the true conception of the physician's life, we not only help them to success and happiness, but we also benefit our fellowman and incidentally we cause many rays of sunshine to enter into the dark niches of our own lives.

Brethren, when we have freed ourselves from these petty jealousies and despicable bickerings and dwell together in peace and harmony, we will receive the respect and love due our noble calling, but so sadly lacking now.

Another drawback to successful organization is procrastination, the sugar coating for laziness. Write to the average doctor to suggest a time to meet, to consider the work of organizing, and where is the answer? The echo answers where, but the doctor never. He intended to write, but was so busy. If by chance you get his attention long enough to organize, that is the last of it. He really expected to attend the meeting, but was busy. We so often delude ourselves with the idea that we are too busy, but if we will only make a beginning we will be surprised to find that it is so easy to become a constant attendant on these meetings.

These obstacles can be overcome only by having active county societies bringing the members into close and frequent association with each other.

Herbert Spencer has said: "Socially, as well as individually, organization is indispensable to growth; beyond a certain point there can not be further growth without further organization." This is equally as applicable to medical men. The county organization means growth of the profession in that county. The convening from time to time and discussing the many parts of our science, the interchange of original ideas, and the relation of personal experience, tend to incite within us new life and greater desires to know more and to do better work. If you know more than the others of your county, come to the society and instruct them; if you know less, come and learn of them. You thereby become more learned and correspondingly more skillful. The frequent association in your society the better acquaints you the one with

the other. You see the faults of the others, and in turn are made conscious of having similar ones; you recognize their virtues, you grow more charitable toward one another; you realize that you are not competitors, but are colleagues working together for the good of mankind.

The people notice with wonder this pleasant but unusual relation existing among you, and they appreciate you as never before. You become a potent factor in the affairs of the community in which you live. Your legislators, when asked by you to support certain measures which are to come before that body, will not refuse, for they see that you are no longer backbiters and dissenters, but are co-workers in one great cause for the good of your fellowman.

It is well to devote occasional meetings to the discussion of the business side of the profession. Having become better physicians you are entitled to greater compensation. My experience in the work of organization convinces me that it is not best for the profession to have compulsory fee bills, for they are indeed a stumbling block in the way of a complete organization, yet I do think it wise to have a reasonable fee schedule, suggestive and not compulsory, and we should discuss the most expedient ways and means of collecting these fees. The majority of the dead beats can be taught to be good pay clients, and so much more appreciative, if we will only work together to accomplish that end. Just as long as Dr. A. will go to see a patient lest he call Dr. B., and both knowing that the fellow owes Dr. C. a large bill of long standing and will not even make an effort to pay it, just that long will our profession continue to be a poorly paid and much imposed upon profession.

The average physician works much more assiduously than he ought to work, and his amiability is spoiled if his life is not shortened by the frequent night calls he is compelled to answer. Ninety-nine per cent. of the night work is absolutely unnecessary, and if we will only make a united effort, we can soon educate the people that they can wait until a reasonable hour to call a physician. Our evenings are inter-

rupted far more often than necessity requires. We should be permitted to have a little leisure with our families after coming home from a very trying day, and, too, we need the evenings for study and reflection. The people can be educated to allow this, and we should begin now to do it. Our Sunday work is entirely too great, and should be confined to the cases really needing attention on that day. This can be arranged in due time by the proper united effort on our part.

I now wish to call your attention to a few of our needs as regards legislation.

We should have a law so defining the practice of medicine as to require the bone rubber, so-called Christian Scientist, and all such ilk, to show equal evidence as we do of qualification to practice before they are allowed to treat disease.

A law making the communication of physician and patient privileged, and another defining expert testimony and providing a fee for such testimony would save us no little embarrassment at times, as well as enrich our coffers to some extent. Not a few of us know how delightful it is to have to hang around the court-house till the court sees fit to have us on the stand for the lawyer to do his best to either make us appear foolish or to perjure ourselves, that he may gain his case with the jury.

The present Act creating a State Board of Health should be amended so that there will be provision for a county board in each county. These county boards should keep a record of all births, deaths, infectious and contagious diseases and have supervision of all other matters that pertain to the health of the counties.

The State Board of Medical Examiners and the Board of Health should be men selected by us from our Association, and the county boards should be controlled by the county societies.

We are sadly in need of a sanitarium for tuberculosis. Some of us have done excellent work to that end, but the Legislature apparently ignores us.

Our boards of education should have at least one physician

on every board, that proper methods may be adopted for teaching the children how to prevent soil pollution and infection therefrom, as well as the dangers of infection from other diseases.

I will not take up more time on this subject, though there are other matters of importance that we should consider in due time.

Now, gentlemen, all of these can not be had in a year or even five years, but if we will get our 146 counties so well organized that they will have the desired influence with their legislators, we will accomplish all of this and more.

Just here, let me say that there seems to be a tendency on the part of many of us to search for new measures to be brought before, the Legislature, and all of them possess some merit. I earnestly ask that you leave all these alone for awhile and advocate with all your might such laws as are most needed for our welfare, and the others will come in, in due time.

A medium of communication with the members of the Association would facilitate the work of completing our county organizations, as well as keep up a renewed interest in the societies. I respectfully recommend that you authorize your Council to enlarge the Bulletin and arrange for the publication from month to month of such matter as will encourage the work of organization. The Bulletin will become a monthly letter from the officers of the Association to the members and foster the idea that it is the organization of the profession for the benefit of its membership, and each member will feel and show a greater interest in its affairs.

Now, fellow members of the Medical Association of Georgia, while much depends upon your officers as to how successful and useful this organization becomes, yet it can never be complete without the co-operation, support, and sympathy of every individual member. I can not tell you how often your President has yearned for an encouraging word or an expression of sympathy, and I am sure he could have done better work if you had but thought to offer your sympathy and sup-

port. I trust you will go home from this meeting fully resolved to in future give your heart and hand to the perfection of this great work.

Ours is the Empire State of the South, let us make it the banner State of the Union in medical organization.

MINUTES OF THE HOUSE OF DELEGATES.

MACON, GA., APRIL 20, 1909.

The first session of the House of Delegates was called to order at 8 p. m., by President T. D. Coleman, of Augusta.

After the presentation of certificates from county societies by delegates, the report of the Committee of Arrangements was called for, and Dr. M. A. Clark, of Macon, Chairman, reported that the Committee had provided the auditorium for the scientific sessions, the House of Delegates to meet in the council chamber, and the councillors in the small room on the left of the hall. The by-laws had been followed literally and arrangement made for the subscription banquet to be held on Thursday night. The Hospital Association had extended an invitation to the members of the Association to visit the hospital, and Mr. Jno. Head, druggist had extended the courtesy of the soda water fountain to members.

On motion the report was adopted.

Report of Committee on Scientific Work was called for, but the chairman was absent.

Report of Council was called for, and extension of time requested, and granted.

Report of Committee on Necrology was presented by the chairman, Dr. J. G. Dean, of Dawson, recording the deaths of ten members since the last meeting.

Mr. Chairman and Gentlemen:

In making this the annual report of the deaths which have occurred in our ranks during the last associational it becomes my unpleasant duty to have to report a loss of eleven of our number as follows:

IN MEMORIAM.

Doctor	County	P. O.	Died
R. J. TRIPPE	Bartow	Cartersville	1909
H. M. JEFFORDS	Worth	Sylvester	1908
W. B. ARMSTRONG	Fulton	Atlanta	1909
F. V. SCHLEY	Muscogee	Columbus	1909
B. E. BRIDGEMAN	Randolph	Shellman	1909
C. C. STOCKARD	Fulton	Atlanta	1909
J. C. FIELDS	Sumter	Americus	1909
H. B. MCMASTER	Burke	Waynesboro	1909
D. L. CHEATHAM	Washington	Sandersville	1909
A. J. TUGGLE	Troup	LaGrange	1909
G. M. MCDOWELL	Pike	Molena	1909

It has not been possible to secure biographies or matter of any kind on some, but those which have been secured follow below.

J. G. DEAN, Chairman Committee on Necrology.

DEATH OF DR. A. J. TUGGLE.

OF LAGRANGE, GA.

The holiday season saddened by the passing of this loved physician and honored citizen.

At 4:30 o'clock on Thursday morning, December 24th, 1908, just one day before he would have celebrated his forty-second year, Dr. Albert J. Tuggle passed from earth to his eternal reward. For many months he had been a sufferer from a malady he knew could have but one termination, and though he knew death was near, he was prepared and met the Dread Messenger like he met the problems of life, with a brave heart and without fear.

With a mind naturally bright, well stored with the best in literature and history, and conversant with modern political thought and progress in the arts and sciences, he was a most delightful conversationalist and companionable man. Learned in his profession, Georgia can boast of but few who were his equal in skill as surgeon or knowledge as a medical practitioner. Positive in his convictions, he was most tolerant of

the opinions of others. Warm in his friendship, he inspired love for himself from all his intimates. Honest in every throught and act, he despised hypocrisy and deceit in others. A man of wonderful will power and strong in his own integrity, none were so quick to give encouragement and sympathy, and the help of good will as he to those of less strength who might yield to a tempation or fall a victim to a weakness they could not master. In the sick room he was most tender, having the confidence and the love of those to whom he ministered. Though not demonstrative, his faith in God was firm and unwavering. In him were the elements of character and strength and sincerity that make men honored.

In contemplating the well rounded character of Dr. Tuggle we can think only of his many and striking virtues. His passing has left a void in the professional and social life of our city, and is in the nature of a personal loss to hosts of people in all walks of life.

Peace to his ashes.

WILLIAM BUCKINGHAM ARMSTRONG.

Dr. William Buckingham Armstrong was born in Atlanta, Georgia, in 1874. He spent his boyhood days in this city, entering the University of Georgia in 1890, completing his course in 1894. He then entered upon the study of medicine in the Atlanta College of Physicians and Surgeons. He remained in this institution one year, then entered the College of Physicians and Surgeons in New York, graduating in the class of 1899. After doing some post-graduate work in the hospitals in New York he returned to Atlanta and entered upon the practice of his profession, in 1900.

In 1901, he married Miss Ruby Dart, of Brunswick, Georgia, who survives him. One son, William Buckingham Armstrong, Jr., also survives him.

Dr. Armstrong soon won the confidence and esteem of his fellow-practitioners and the people. Although a man of unusual talents he was modest, and though given many distinc-

tions he bore all honors with becoming grace. He was a kind, gentle and devoted husband and a loving father. He was a scientific physician,—never satisfied with superficial knowledge, but made a sincere effort to fathom the depths of every problem which he was called upon to solve. He had a high regard for the dignity of his profession; he was a true physician; he realized his responsibility and was ever faithful in the discharge of his duty,—it mattered not whether it directed his foot-steps to the homes of the rich or the hovels of the poor. Time will not permit me to recall his many deeds of kindness. Suffice it to say that in many an humble dwelling as well as in the homes of the rich there were tears and saddened hearts because of his untimely death.

Sweet is the recollection of a physician so kind, gentle and true to those he served and who knew him best. It is said our places are soon filled and we are forgotten. It is not true of all. A real man, who comes so close to us, is never entirely forgotten. There will be times when the mention of his name will cause us to recall his deeds with a very tender recollection, and bring before us very vividly some anxious hours, perhaps a great sorrow, and cause us to remember the solace given by his skill, his presence and his words of comfort.

I believe Dr. Armstrong will so live in the hearts of many of his patients and friends who entrusted themselves to his care.

In his death the Medical Profession has lost a zealous, conscientious worker, a truly scientific man, who had his mind the cure of disease. He is a distinct loss to the State and upon the discovery of better means and better remedies for the city in which he lived, notwithstanding the fact that he was yet a young man. He had made his presence felt, and those who knew him best all agree that had he lived only a few years longer he would have rendered even more valuable service to this State and her people.

With perfect candor it can be said that in him God made a real man, a true friend, a devoted husband and a loving

father. Those of us who knew him best can never forget him. He had endeared himself to us in such a way that time—no matter how long—can never efface his memory.

To his family we extend our deepest sympathy and assure them that in their bereavement the State Association has sustained a loss only equalled by that of the community in which he lived. C. W. STRICKLER.

RESOLUTIONS ON THE DEATH OF DR. C. C. STOCKARD.

One by one our co-workers answer the Final Roll Call and lay down their armor in peace to enter the Life beyond. Dr. Charles Cecil Stockard, our friend and professional brother, answered that summons in the full fruition of his professional life and usefulness.

To know him was to love and respect him.

He was a true Christian physician, believing not only in the spiritual life beyond, but also in living that life here, proving true to his church, his family, his professional brethren and to suffering humanity.

He did much to establish an ethical, legitimate, professional basis of the treatment of the drug habitue and inebriate.

Dr. Stockard was one of the pioneers in the establishment of a private sanitarium or infirmary in the city of Atlanta, owning and operating one at the time of his death. As a small token of our regard and esteem, Be it resolved that:

In the death of Dr. C. C. Stockard, the Fulton County Medical Society has suffered a material loss, the profession and humanity a tried and true friend. That we extend to his widow and family our sincere sympathy and sorrow.

That a copy of this report be spread upon the minutes, a copy be sent to Mrs. Stockard and that it be published in the daily papers.

Respectfully submitted,

R. R. KIME.
W. L. CHAMPION.
L. C. FISCHER.

Report of Committee on Public Policy and Legislation was called for, but the chairman was absent. Dr. R. B. Barron of Macon, a member of the committee, stated that no meeting of the committee had been called so far as he knew.

Under unfinished business, attention was called to the fact that while the death of Dr. F. V. Schley had been reported by the committee on Necrology, the Doctor had not been a member of the county medical society, and could not therefore have been a member of the Medical Association of Georgia.

Dr. R. B. Barron, of Macon offered the following resolution which was duly adopted:

Resolved, That it is the opinion of the House of Delegates, of the Medical Association of Georgia—that subordinate or collateral meetings of the medical profession of Georgia be not held at the same time—either at the same place—or other places, as the Medical Association of Georgia.

At the request of Dr. R. B. Barron, of Macon, the secretary read a circular letter signed by the Chairman of the Council on Defense of Medical Research, Relating to Anti-vivisection Legislation, which was on motion of Dr. McArthur referred to the Committee on Public Policy and Legislation.

On motion of Dr. Davis, the House of Delegates voted to meet every day at 2 p. m., for the transaction of necessary business.

On motion of Dr. R. B. Barron, of Macon, the house voted to take up the resolutions and amendments proposed last year, and dispose of them.

The secretary read the amendment to the constitution offered by Dr. Davis, to change the words in section three. Article 9, referring to the time of election of officers, "Last Day" to "Second Day," which after some discussion was voted upon, and the amendment declared not adopted.

The secretary read the amendment offered by Dr. Harrington to section 3, article 9, of the constitution, referring to the hour for election of officers, to change the words "Three

o'clock" to the words "ten a. m., o'clock," which was voted upon and the amendment declared not adopted.

The secretary presented the amendment offered by Dr. A. W. Sterling, to section 3, article 9, of the constitution to read "The officers of this Asociation, except the councillors, who shall be elected by the members of his own district," shall be elected etc., and on vote of the house the amendment was declared not adopted.

The Council met at 8 a. m. Tuesday morning, but not having a quorum, adjourned to meet later to-day.

The session then adjourned to reconvene to-morrow at 2 p. m.

The fourth session of the House of Delegates was held on Friday, at 2 p. m., the President Dr. T. D. Coleman, presiding.

The minutes of the previous session were read and adopted.

The report of the Committee on Tuberculosis was presented by Dr. T. E. Oertel and adopted.

April 20, 1909.

To the State Medical Association, Macon, Ga.

Gentlemen: I have to submit the following report on behalf of the Committee on Tuberculosis:

During the year the activity of the Committee was limited to the endeavor to pass the Bill introduced by the Committee into the Legislature at the past session. As Chairman, I urged, personally when possible, and by mail each member of the Committee to use his influence with his representatives and to explain to them the benefits from the passage of this Act. At the request of the Committee on Legislation, I went to Atlanta and addressed the meeting of the members of the Legislature in the House of Representatives and was very much astonished when I found that the Bill for the State Tuberculosis Sanitarium which was passed by the Legislature was not the one introduced by this Committee. Such a Bill as passed, however, was doubtless helped by our efforts and

whether or not the measure as passed is a wise one the future will determine.

The life of your Committee ends with this session. In view of the fact that we are recognized by the National Association as the State Anti-Tuberculosis Society it would seem that some steps should be taken looking towards the perpetuation of the Committee or a similar body within the State Society. I would suggest that the matter be given careful consideration and also that, if possible, a more active campaign should be carried out in the future than your present Committee has been able to accomplish. In relinquishing this work I wish to thank the individual members of the Committee for their efforts in the propagation of the much needed knowledge relative to tuberculosis and in their support of their executive officer.

Yours very truly,

T. E. Oertel, Chairman.

Dr. R. R. Kime, Atlanta, offered the following resolution for the Committee on Tuberculosis: Resolved, That a Committee of five (5) members of the Medical Association of Georgia be appointed for a term of five (5) years as a Committee on Tuberculosis. That said Committee be empowered to act with other organizations throughout the State in combining and uniting the forces in the most efficient manner for progressive work in combating tuberculosis throughout the State of Georgia. The resolution was adopted. The following Committee on Tuberculosis was appointed by the President:

R. R. Kime, Chairman, Atlanta; Wm. C. Pompelly, Macon; Geo. R. White, Savannah; E. E. Murphey, Augusta; C. H. Richardson, Montezuma.

The second session of the House of Delegates was called to order at 2 p. m., by the President Dr. T. D. Coleman.

The minutes of the previous session were read and adopted.

The Committee on Scientific Work, Dr. W. W. Owens, Chairman, presented the program for the meeting, which report was adopted.

A resolution offered by Dr. Dunbar Roy, Atlanta, at the regular meeting as follows: Resolved, That it is the desire of the Medical Association of Georgia to have the paper read by Dr. Thomas R. Wright of Augusta, on "The History of the Modern Treatment of Penetrating Wounds of the Abdomen," published in the Journal of the American Medical Association, and that the doctor be requested to read the paper at the next meeting of that Association at Atlantic City if possible,—was adopted.

The recommendation of Dr. T. J. Charlton to the House of Delegates that Dr. Wright's paper be published and a copy sent to every doctor in the State was adopted.

The Secretary presented the Report of the Council, which was adopted. (See report of Council).

A resolution offered by Dr. E. C. Davis to amend the by-laws, to limit the time of reading a paper to fifteen minutes and the time allowed each member for discussion 5 minutes, was adopted.

On motion of Dr. J. Lawton Hires, the House voted the appointment of a special committee to draft proper resolutions on the death of Dr. W. B. Armstrong and Dr. H. B. McMasters for publication in the Transactions and instructed that copies of such resolutions be sent to respective families of these deceased members.

Dr. Crane offered an amendment to the by-laws—p. 5, chap. 3, as to the time of meeting of the House of Delegates—to read "The House of Delegates shall meet at 9 a. m. on the first day of the regular session," which was adopted.

The session then adjourned.

The third session of the House of Delegates was held on Thursday at 2 p. m.

President T. D. Coleman in the chair.

Minutes of the previous meeting read and adopted.

The report of the Secretary was read and adopted (See Secretary's report).

REPORT OF THE SECRETARY-TREASURER.

The membership of the Association is about twelve hundred. Several County societies report an increase in membership but this gain is offset by the lukewarm members of some of the smaller counties who are slow in sending dues.

Reports have been received from seventy-five county societies. Others are yet to be sent in. Two additional counties have been organized, also two additional district societies.

In compliance with the resolution of the Association the Secretary attended the meeting of the Association of State Secretaries. While some information was gained, the Secretary does not recommend a continuance of this appropriation.

The funds of the Association are deposited in two of the National banks in Atlanta, in accordance with the resolution adopted at the last meeting of the Association. The financial report is as follows:

EXPENSE.

April	22,	1908	M. A. Clark, bill J. P. Stevens Co. .8	12.50
June	29.	"	Porter-Wrigley Co., typew't'r ribbon	.75
"	"	"	Fielder & Allen, repairs typewriter	4.75
"	"	"	Bennett Co., rubber stamp	1.60
"	"	"	Montag Bros., envelopes	8.40
"	"	"	Huddleston Co., printing	12.50
July	22	"	Franklin-Turner Co., on account ..	1,000.00
June	29.	"	W. B. Hardman, exp. as councillor	10.45
"	"	"	J. D. Hermann, exp. as councillor	28.00
"	"	"	A. T. Calhoun, exp. as councillor	14.35
"	"	"	J. Lawton Hiers, exp. as councillor	83.10
"	"	"	T. J. McArthur, exp. as councillor	16.00
"	"	"	W. W. Pilcher, exp. as councillor	41.23
"	"	"	W. L. Fitts, exp. as councillor ...	12.16
"	"	"	L. S. Osborn, exp. as councillor ..	11.32
"	"	"	J. N. Reik, stenographer & exp.	165.00
July	7.	"	Stamps	24.00
"	11.	"	Frank'n-Turner Co., bills to May 12	78.71
"	13.	"	Claude A. Smith, meet'g State secs.	59.75
"	16.	"	So. Bell Telephone Co.	1.00
"	30.	"	Franklin-Turner Co., on account ..	200.00
"	"	"	Stamps	24.00
August	5.	"	Franklin-Turner Co., on account ..	200.00
October	24.	"	Stamps	8.00
"	27.	"	J. P. Stevens Co., letter heads ...	14.00
"	10.	"	Herbert Respess, exp. transactions	2.80
November	11.	"	Stamps	10.00
"	24.	"	Montag Bros., envelopes & printing	11.32

January	1,	1909	Claude A. Smith, salary account ..	500.00	
"	26,	"	Stamps	5.00	
February	1,	"	Stamps	15.00	
March	30,	"	W. F. Westmoreland, bills Long Mem. Asso.	163.40	
April	2,	"	Stamps	5.00	
"	5,	"	Huddleston Prtg. Co., letter heads	11.50	
"	17,	"	Stamps	5.00	
"	"	"	J. M. Sigman, exp. transactions ..	6.20	
"	19,	"	Telegram Publishing Co., printing	70.80	
"	"	"	Geo. A. Floding, buttons & badges	16.14	
"	"	"	Claude A. Smith, salary	500.00	
					$3,353.73
April	17,	1908	Balance in bank $2,276.32		
			Collections, dues, etc. .. 3,897.31		
			Total $6,173.63		
			Expenses 3,353.73		
			Balance in bank $2,819.90		

Respectfully submitted,

CLAUDE A. SMITH,
Secretary-Treasurer.

The Committee on Public Policy and Legislation reported that last June there was introduced in the Legislature a bill for the establishment of a Sanitarium for Tuberculosis, which was passed and an appropriation made for that purpose.

The Committee reported upon a letter from the Council on Defense of Medical Research, which had been referred to it, expressing its disapproval of any legislation regulating or restricting experiments upon animals or limiting vivisection in experimental medicine. The report was adopted..

The Chair appointed Drs. Strickler, Dean and Baird as a special committee to draft suitable resolutions on the deaths of Drs. Armstrong and McMaster.

The following resolution was introduced by Dr. Aycock, and on motion of Dr. Davis referred to the Committee on Public Policy and Legislation:

RESOLVED, That it is the sense of the Medical Association of Georgia that one Board of Medical Examiners will be conducive to the best interest of the citizens of this State, as well as the medical profession, and the Committee on Legislation is requested to prepare an amendment looking to the accomplishment of the same.

A resolution was introduced by Dr. Terrell to amend

article 4, sec. 2 of the Constitution by adding to the section the sentence "or congressional district society or those received by majority vote of the House of Delegates at the meeting at which application is made."

The session adjourned.

On motion of Dr. McArthur the House voted the appropriation of one hundred dollars toward the fund for raising the mortgage on the home of the late Major James Carroll.

Dr. Claude A. Smith, of Atlanta, introduced the following:

Whereas these most interesting and valuable papers just read giving reports from the Georgia Pasteur Institute and the State Board of Health, indicate that there is a marked increase of rabies in the State of Georgia, and whereas it has been demonstrated in England and other countries that this disease can be stamped out by the muzzling of dogs, therefore: Be it resolved, That the Medical Association of Georgia recommends that its Committee on Public Policy and Legislation take up the matter of having enacted the Bill which was introduced before the legislature at the last session requiring the muzzling of dogs. This was amended by Dr. F. W. McRae as follows:

That if in the judgment of the committee it be wise, it shall secure the corporation of the daily press in disseminating knowledge regarding this disease and thus assist in the enactment of the Bill. The resolution as amended, was adopted.

Dr. W. W. Pilcher, Warrenton, moved the recommendation to the Association that a committee be appointed at the meeting of each district association to pass upon the papers read there and that the meritorious ones be recommended to the Secretary of the Association to be placed upon the regular program for the annual meeting. The motion was adopted.

Dr. Michael Hoke reported as delegate to the American Medical Association that he had attended the meeting and was very favorably impressed with the work of the Association and felt that more of the members of the Medical Association of Georgia should attend. The report was adopted.

The session then adjourned.

FRIDAY AFTERNOON SESSION.

Election of officers.

President, Thos. J. McArthur, Cordele; 1st vice-president, M. F. Carson, Griffin; 2nd vice-president, Jno. R. Shannon, Forsyth; secretary-treasurer, Claude A. Smith, Atlanta.

Councillors—Ninth district, W. B. Hardman, Commerce; tenth district, W. W. Pilcher, Warrenton; eleventh district, J. D. Hermann, Quitman.

Delegates to the American Medical Association—Dr. Geo. R. White, Savannah; Dr. H. F. Harris, Atlanta.

Next place of meeting, Athens, Ga., third Wednesday in April 1910.

Dr. Fowler and Dr. White were appointed by the Chair to conduct the newly elected President to the platform.

Dr. McArthur: Words are too cold and empty to express to you my gratitude at your having conferred upon me this distinguished honor. It is indeed an honor that might make the heart of any Georgia doctor swell with gratitude.

I promise you that I will discharge the duties that devolve upon me to the very best of my ability and I ask your co-operation and help and advice. I ask from every one, from one side of the State to the other, to join us in making the coming year one of the best in history of our Association.

Adjournment.

COUNCIL MEETING, APRIL 21, 1909.

The following members were present: Drs. E. C. Davis, J. L. Hiers, T. J. McArthur, J. D. Herman, W. B. Hardman, A. T. Calhoun and Claude A. Smith.

Dr. Hiers reported that the work in the First District was progressing nicely.

Dr. McArthur made the report of the Third District, and stated that nearly all of the counties were organized, but there was need of some method of keeping up interest.

Dr. Davis reported the Fifth District fully organized, but

the greatest problem was to increase interest in the county societies.

Dr. Calhoun for the Seventh District reported that Haralson County had been organized and that Whitfield County contained many unlicensed practitioners, which interferred with new organizations in that county. He reported the District Society organized and well attended.

Dr. W. B. Hardman of the Ninth District reported that he had succeeded in organizing the Ninth District Society, which was doing good work.

Dr. Herman reported that he had been trying to get the District Societies organized and hoped to complete this in the near future. On account of the extent of his territory some of the counties were still unorganized.

The following amendments to the by-laws of the Association were recommended and adopted at this meeting:

CHAPTER V.

Sec. 6th. Any member of the Council who fails to attend two regular successive sessions of the Council or whose district does not show evidences of the performances of his duties during the year, unless he renders an acceptable excuse to the council, his position shall be declared vacant by the President and his successor appointed by the President.

Sec. 7. In the absence of a councilor the President is empowered to appoint a representative from the District as acting Councilor.

Sec. 8. Each councillor shall render at every session a written report of each county in his district.

REPORT OF COUNCIL.

We, the Council beg leave to submit the following report:

We find the books of the Secretary neatly and accurately kept and commend his work during the past year.

We have 96 County Societies organized. Some of these are composed of two and three counties. Two additional

District Societies have been organized, making ten in all. This leaves only one district yet to be organized into District Society.

These District Societies are all doing excellent work having good meetings and much interest being manifested. They are promoting a spirit of professional fraternity and good fellowship, which is extremely gratifying to the Association.

The membership is about 1200 showing an increase in some counties which is offset by a slight shrinkage in other counties but the quality of the work has shown a decided improvement in every particular.

The work of the President throughout the entire year has been very effectual and with gratifying results.

During the year an additional check of $294.03 was received from the Central Bank & Trust Co. on account of failure of the Neal Bank. We are assured that additional payments will be made in the future.

E. C. Davis, Chairman; Thos. J. McArthur, A. T. Calhoun, W. L. Fitts, J. Lawton Hiers, W. B. Hardman.

MEETING OF COUNCIL, FRIDAY, APRIL 23, 1909.

Members present: Drs. Davis, Hiers, Calhoun, McArthur, Fitts and Hardman.

It was moved and carried that a Committee on Publication of the Council be appointed consisting of the Chairman of the Council, the Secretary of the Association, and the Clerk of the Council.

It was moved and carried that the Secretary be authorized to provide a certificate of membership to each member of the Association.

It was moved and carried that the Committee on Public Policy and Legislation be requested to investigate the law of defining the practice of medicine in Georgia.

A resolution urging the reappointment of a Committee on Tuberculosis was read and referred to the House of Delegates.

MINUTES OF GENERAL SESSION.

MACON, APRIL 21, 1909.

The Sixtieth Annual Session of the Medical Association of Georgia was opened with prayer by the Rev. T. D. Ellis, D.D.

The address of welcome was delivered by Hon. T. E. Ryals of Macon.

The response to the address of welcome was delivered by Dr. Thomas J. Charlton of Savannah.

The report of the House of Delegates was read and adopted.

Scientific papers were read and discussed as follows:

Our Duty to the Consumptive—Dr. George Brown, Atlanta.

Tuberculosis—Dr. J. E. Summerfield, Atlanta.

Vaccines in the Diagnosis and Treatment of Tuberculosis—Dr. E. C. Thrash, Atlanta.

These papers were discussed by Drs. Niles, Atlanta; Warfield, Savannah; Curtis, College Park; Slack, LaGrange; Visanska, Atlanta; Singleton, Charlton, Savannah; McHatton, Macon; and in closing, by the essayists.

Some remarks on the proper use of Nuts as Food—Dr. Geo. M. Niles, Atlanta.

Discussed by Drs. Brown, Atlanta; and Warfield, Savannah.

The Doctor—His Relation to Public Sanitation—Dr. J. C. Beauchamp, Williamson.

Discussed by Drs. Curtis, College Park; Clarke, Macon; Bassett, Savannah; and in closing by the essayist.

The History of the Modern Treatment for Penetrating Wounds of the Abdomen—Dr. Thos. R. Wright, Augusta.

Dr. Dunbar Roy, Atlanta, offered a resolution to request Dr. Wright to have this paper published in the Journal of the American Medical Association and to read it at the next meeting of that Association in Atlantic City if possible,—which resolution was adopted.

Dr. Charlton of Savannah asked that it be recommended to

MEDICAL LIBRARY
EMORY UNIVERSITY

the House of Delegates that Dr. Wright's paper be published and a copy sent to every doctor in the State of Georgia, which recommendation was adopted.

The session then adjourned.

WEDNESDAY AFTERNOON SESSION.

The Traffic in Human Life in Georgia—Dr. T. Neal Kitchens, Columbus.

Discussed by Drs. Bright, Dublin; Colley, Savannah; Dean, Dawson; Hallum, Carrollton; Clarke, Macon; Graham, Ellijay; Hiers, Savannah; and in closing by the essayist.

Whooping Cough—Dr. S. A. Visanska, Atlanta.

Autointoxication—Dr. Thos. J. McArthur, Cordele.

Discussed by Dr. Niles, Atlanta.

A Plea for the Thorough Removal of Adenoids and Tonsils in Children—Dr. Dunbar Roy, Atlanta.

Adenoids—Dr. J. Lawton Hiers, Savannah.

Discussed by Drs. Slack, LaGrange; Clarke, Macon; Visanska, Atlanta; Hardman, Commerce; Charlton, Savannah; Bassett, Savannah; Stapler, and in closing by the essayists.

How to Abort Acute Gonorrhoea—Dr. W. L. Champion, Atlanta.

A Method of Curing Quickly a Beginning Gonorrhoea—Dr. E. G. Ballinger, Atlanta.

Discussed by Drs. Fowler, Atlanta; and in closing by the essayists.

The session then adjourned.

WEDNESDAY EVENING SESSION.

Pathology of Toxic Arthritis—Dr. Chas. R. Andrews, Atlanta. (Read by title).

Operative Treatment of Toxic Arthritis—Dr. Michael Hoke, Atlanta. (Read by title).

Clinical Features of Pellagra—Dr. N. P. Walker, Milledgeville.

Pellagra, with Report of Two Cases—Drs. Lawrence Lee and Ernest S. Cross, Savannah.

Pellagra—Dr. F. H. Harris, Atlanta.

These papers were discussed by Drs. Palmer, Alley; Bassett, Savannah; Curtis, College Park; Jones, Milledgeville; Allen; Paulin, Atlanta; and in closing by the essayists.

The session then adjourned.

THURSDAY MORNING SESSION.

The President's Address was delivered by Dr. T. D. Coleman, Augusta.

The Secretary's Report was read and adopted. The report of the House of Delegates was read and adopted.

The Conservative Treatment of Lateral Spinal Curvature—Dr. Theodore Toepel, Atlanta.

Discussed by Dr. Hoke, Atlanta, and in closing by the essayist.

Present Status of Calmette Conjunctival Reaction in the Diagnosis of Tuberculosis—Dr. F. P. Calhoun, Atlanta.

Discussed by Drs. Thrash, Atlanta; Warfield, Savannah, and in closing by the essayist.

Inguinal Hernias Operated on under Local Anaesthesia—Dr. A. G. Little, Valdosta.

Hernia Operations with Local Anaesthesia—Dr. W. L. Cook, Columbus.

(a) Strangulated Congenital Hernia in Infant Four Months of Age; Operation; Recovery.

(b) Strangulated Inguinal Hernia in Adult. Resection of Eight Inches Small Intestine; Lateral Anastomosis; Recovery.

(c) The Success of Local Anaesthesia in the Performance of Operation for Radical Cure of Inguinal Hernia. Dr. W. W. Battey, Augusta.

Discussed by Drs. Rakestraw, Savannah; Norton, Savannah; and Cook, Columbus.

The Patient as a Factor in the Treatment of Disease—Dr. T. J. Charlton, Savannah.

Discussed by Drs. Cooley, Savannah; Rakestraw, Savannah, and in closing by the essayist.

Prevention of Ophthalmia Neonatorum—Dr. H. H. Martin, Savannah.

Discussed by Drs. Baird, Atlanta; Charlton, Savannah; Rakestraw, Savannah; and in closing by the essayist.

Report of a Case of Diphtheritic Opthalmia—Dr. J. N. Smith, Valdosta.

Discussed by Drs. Calhoun, Atlanta, and Duncan, Atlanta.

Some Cases of Mouth and Tongue Disease—Dr. H. B. Hutchins, Atlanta.

Discussed by Dr. McRae, Atlanta.

The Significance of Uterine Hemorrhage—Dr. G. A. Wilcox, Augusta.

Antipyretics in Febrile Diseases—Dr. J. B. Baird, Atlanta.

Discussed by Drs. Duncan, Atlanta; Hardman, Commerce; and in closing by the essayists.

THURSDAY AFTERNOON SESSION.

The Common House Flies are the Cause of Typhoid Fever —Dr. J. W. Palmer, Ailey, Ga.

Discussed by Drs. Thrash, Atlanta; Smith, Atlanta; McHatton, Macon; Curtis, College Park; Paulin, Atlanta; Hardman, Commerce; Duncan, Atlanta; Graham, Ellijay; Bassett, Atlanta; Cooley, Savannah; Stowe, Jesup, and in closing by the essayist.

Ocular Symptoms in General Medicine—Dr. A. W. Sterling, Atlanta.

Discussed by Drs. Martin, Savannah, and Houston, Augusta.

Modern Clinical Diagnosis: The Advantages and Limitations—Dr. Ralston Lattimore, Savannah.

Discussed by Drs. Graham, Ellijay; Rakestraw, Savannah;

Warfield, Savannah; Charlton, Savannah; Bassett, Savannah; Paulin, Atlanta, and in closing by the essayist.

How Shall We Close and When Shall We Dress Operative Wounds?—Dr. Wm. P. Nicholson, Atlanta.

Discussed by Drs. McRae, Atlanta; Lokey, Atlanta; White, Savannah; and in closing by the essayist.

The Uses of Conservatism in Surgery—Dr. C. M. Rakestraw, Savannah.

Discussed by Drs. Cooley, Savannah; Graham, Ellijay; White, Savannah, and in closing by the essayist.

Extension in the Treatment of Fractures: Its Application in Bardenheuer's Clinic in Cologne—Dr. Geo. R. White, Savannah.

Discussed by Drs. Charlton, Savannah; Rakestraw, Savannah; Norton, Savannah; and in closing by the essayist.

The session then adjourned.

FRIDAY MORNING SESSION.

The report of the House of Delegates was read and adopted.

The report of the Council was read and adopted.

The Senile Prostrate—Dr. Floyd W. McRae, Atlanta.

Injuries of the Urinary Bladder—Report of Case of Extraperitoneal Rupture—Dr. Walter A. Norton, Savannah.

The Treatment of Chronic Prostratitis—Dr. W. A. Fowler, Atlanta.

Discussed by Drs. Harold, Macon; McRae, Atlanta; and Norton, Savannah; and Fowler, Atlanta.

Some Interesting Obstetrical Cases—Dr. Andrew Kilpatrick, Augusta.

Headache—Dr. Chas. C. Harrold, Macon.

Discussed by Dr. Duncan, Atlanta; and in closing by the essayist.

The Psychic Factor in the Functional Neuroses, with a Consideration of Psychotherapy—Dr. Martin Cooley, Savannah.

Discussed by Drs. Charlton, Savannah; Rakestraw, Savannah; Houston, Augusta, and in closing by the essayist.

Squint and the Importance of Early Correction—Dr. Hugh M. Lokey, Atlanta.

Neurasthenia—Dr. W. Herbert Adams, Savannah.

Antirabic Serum with Report of Cases—Dr. Jas. M. Brawner, Atlanta.

Preliminary Report on the Use of Antirabic Serum—Dr. J. Edgar Paulin, Atlanta.

Discussed by Drs. Smith, Atlanta; Warfield, Savannah; McRae, Atlanta; and in closing by the essayist.

The Secretary introduced a resolution:—Resolved, That it is the sense of the Association that the Committee on Public Policy and Legislation take up the matter of having enacted the bill which is now before the Legislature regarding the muzzling of dogs, etc., and that if in the judgment of the Committee it be wise it shall have published these papers in the daily press. The resolution was adopted and referred to the Committee on Public Policy and Legislation.

The Use of Spirits of Turpentine in a Case of Tetanus with Recovery—Dr. Chas. Pelham Ward, Atlanta.

The Use of Fats in the Treatment of Stomach Diseases—Dr. W. R. Houston, Augusta.

Discussed by Drs. Warfield, Savannah; and Houston, Augusta.

Accuracy in Physical Diagnosis of Diseases of the Chest—Dr. Lewis M. Gaines, Atlanta. (Read by title).

Points in the Prophylaxis of Arterio Sclerosis—Dr. Lewis M. Warfield, Savannah. (Read by title).

Cystic Kidney—Drs. G. Pope Huguley, and J. Edgar Paulin, Atlanta. (Read by title).

The Value and Limitation of Blood Examinations in the Diagnosis of Diseases Accompanied with Enlargement of the Spleen; with Report of a Case of Splenic Anaemia—Dr. B. H. Bassett, Savannah.

The session then adjourned.

OUR DUTY TO THE CONSUMPTIVE.

BY GEORGE BROWN, M. D., ATLANTA.

First: We might say, what has Georgia done for her tuberculosis patients?

Second: What is she going to do for her tuberculosis patients?

Some years ago in an address delivered by me before the Georgia State Medical Association at Macon, Georgia, I used the following words:

"I wish to go on record here in demanding that tubercular patients, who are unable to work and support themselves, and who have no means, be made the wards of the State, and be given at the expense of the State the proper care and attention.

"I wish to go on record in demanding also that the same laws that apply to these patients in other States be applicable to these in this State as far as practical with * * * * * * * * idea of hygiene and sanitation."

"As to the first demand, common humanity will in time care for all those who cannot care for themselves. It is an unwritten law in the minds and hearts of good men, that the strong should take care of the weak and helpless of our land. Hence we establish sanitariums for the insane, the hospitals for the sick, supported by the State and municipality.

"But to do this, to make these people wards of a State, needs the assistance of the law-makers of the State, forced by sentiment from the masses of the people. To educate the people to what is necessary to be done should be the aim of every physician."

Now, in regard to the above quotation I will state that the first delegation of physicians to attend a national meeting from the South were appointed by Governor Allen D

Candler, of Georgia. The first address on this subject delivered at the National Convention for the Prevention of Consumption, by a Southern doctor, was delivered by a Georgia doctor, T. V. Hubbard, of Atlanta. The first president of a national society of this class was an Atlanta physician, which position I had the honor to hold. The first commission for the study of this disease in the South was named by Ex-governor J. M. Terrell, who created the same, and was drawn by Col. T. B. Felder at my suggestion and was introduced by Hon. Harvey Jordan, President of the Farmers' Alliance, and was presided over by Dr. Charles Hicks, of Dublin, Ga.

The first meeting to be held concerning this subject south of Mason and Dixon's Line was held in the State Capitol at Atlanta, Georgia, and was an Association of the American Anti-Tuberculosis League, held in April, 1904, over which I had the honor to preside.

The third State in the South to pass a bill for the establishment of a State sanitarium was the State of Georgia. This was passed at the last session of our present Legislature. The trustees and managers of this institution have been recently appointed by Governor Hoke Smith.

Now, as to what Georgia is going to do, I do not believe that has ever been a time in the world when people are more eager for information concerning this subject than now. Exhibits like the ones which are being held in this stall are producing great results and they should be exhibited in every city of any size in our State.

Under the trustees and managers of the Commission recently appointed by Governor Smith it is safe to say we will soon have a Sanitarium; that it will be a point from which education concerning this disease is disseminated into every county of the State. How much good this will do can not be estimated in dollars and cents. Nor can one for a moment figure on the happiness and comfort that it will bring to a great many of these unfortunate sufferers. It is safe to say in conclusion that the State of Georgia will do her

part in taking care of these unfortunate sufferers, and in a few years we hope to see this a rare disease in this section of the country.

The Duty of the Municipality.

It is the duty of any city of any size to provide a hospital for the tubercular poor. The expense of providing these hospitals on the modern plan is very small, as it is obvious that large buildings are not necessaary, the cottage or tent system being the one that is used to-day all over the world. Especial attention should be given to convicts and inmates of poor farms in each county and they should have proper attention and proper sleeping quarters provided for them when suffering from this disease. How much further the municipality could go is obvious to every student of sanitary science. Air, sunlight, and clean premises will do much, not only toward reducing the death rate of these diseases or of other diseases, but will also add much to the comfort of the patients and the strictest sanitary laws should be enforced in every city in Georgia.

The duty of the board of education in the different cities and towns is plain to any one who has studied this disease. The children should be educated into the hygiene of personal cleanliness in every manner possible. The school room should be well ventilated and well lighted. Spittoons should be provided and cleansed daily with the proper antiseptic solution for destroying the bacilli.

Nothing on earth would be more conducive to aiding this campaign than by lectures delivered in each of the schools in a city. These can be delivered by local doctors once or twice a term or by other students of sanitary science whom the board of education might see fit to invite.

The Duty of the Physician.

will be next considered. At the opening of the session of the Board of Trustees of the State Sanatorium Association, held in the State Capitol a short time ago, Dr. Jefferson

Davis took the chair and said: "If this institution is to be an educational one the first people in Georgia that we want to educate are the doctors." That is true and the duty of the professional man is to tell the tubercular patient his condition. Seven or eight out of ten of them will not tell the family of the patient's condition. They say, "This man has a little lung trouble or bronchial trouble. Put him on cod liver oil and let him go until he gets in the last stages." And then they get very busy and hurry him off to a sanitarium or some other place so that he will not die on their hands, but the doctors who do this class of works will soon find that their days are numbered in the State of Georgia. The people are getting educated up to the point of demanding a square deal. Patients of any intelligence demand to know their exact condition and their families demand to know their condition. While they know this they are also getting well enough educated to select a proper place to go to and the proper treatment if their financial condition is such that they have a chance to save their lives. There is absolutely no home treatment for this disease. In fifteen years' experience I have never yet seen a case cured at home. The quicker we realize it and the quicker the people realize it the quicker we will stamp out consumption. Those that are able to pay will go to sanitariums where they can get the proper attention, those that are not will demand that the State and counties take care of them and make them wards of the State as they should be. So these queries tend to the plain proposition whether the doctors should be fair and square with the patient or whether they will avoid it by saying, as it has been the custom to do for a number of years, "It is only a little lung trouble or bronchial trouble."

The ratio of cures in the modern sanitarium to-day makes it a matter of duty to every physician to send his patients to them if they are able to pay the fees. If they are not it is his duty to do the best he can for them at home and to fight unceasingly to make his county and State take care of those who are not able to pay.

In taking up this work in this State it was not my intention to antagonize any member of any body of the profession. When I commenced the work no other doctor in the State was paying any attention to it. There was not a vial of abuse but what was uncorked and poured upon my head for the work I have done in this Campaign of Education, but I have lived to see the people endorse my every action and I have lived to see every theory I have advocated proven. I have lived to see every reform I have attempted carried out and it is a matter of utter and absolute indifference to me what a few ten cent doctors over Georgia think of this Educational Campaign. It is right, it is correct and when such men as the Calhouns, McRaes, Nobles, Westmorelands, Harrises and Hicks of this State help it will be only a question of time until we will bring down the death rate in the State of Georgia lower I believe than in any State in the Union.

THE DUTY OF THE INDIVIDUAL.

and of all society in general in this campaign is to assist in every way they can. We are not running this campaign as a medical society, we are running it, in plain simple English terms, to educate the poorest laboring man in the State how to protect his wife and children from this disease. Every man and woman that joins an anti-tuberculosis league in his town assists that much in the work. Their moral influence amounts to a great deal and the preachers and authors who are being awakened to this fact are lending valuable aid all over the State. Too much can not be said in praise of the newspapers of the State who have given their columns cheerfully and freely at all times in this work. The thanks of every man connected with this movement should be rendered to each and all of the good fellows, the newspaper men, who are the first always to take up anything for the welfare of humanity.

The Duty of the Consumptives,

or those who have contracted this disease, is plain. Follow the advice of your physician and avoid infecting others with whom you come in contact. Make up your mind that your life shall be lived in a hygienic manner and that you will rigidly follow all directions given you. Above all, do not lose heart and do not lose hope, the proportion of cures now makes everything on your side and those who have been told of their condition in the incipiency of the disease have nothing more to fear than they have of typhoid or yellow fever.

In summing up this paper I make a strong appeal for a "long pull, a strong pull and a pull all together." The cities, the municipalities, the boards of education, the physicians, the individuals and the press, let us all meet upon a common ground; discard all ideas of ethics, society and rules, and adopt one motto: That which is best for mankind. Go to work in this campaign and with a united effort, individual work, never tiring with endeavors, work until we proclaim in tones which will reach from one end of this State to the other the fact that in 1930 we will have no Tuberculosis in the State of Georgia.

TUBERCULOSIS.

BY J. E. SOMMERFIELD, ATLANTA, GA.

Much interest has been manifested during the past few years, not only by the medical profession, but by the general public as well, in the prevention and cure of Tuberculosis. This interest has been greatly augmented by the International Congress on Tuberculosis, held in Washington, D. C., last October, by the popular Tuberculosis Exhibits which are being held in various parts of the country, and by the sale of the Red Cross Christmas stamps, of which over 30,000,000 were sold last December.

After much preliminary work on the part of the Tuberculosis Committee of this Association and others the last Georgia Legislature enacted a law to establish a State Sanitorium for Tuberculosis. The appropriation made was small, but the Governor has appointed an able Board of Trustees and in the course of a few years I feel confident that this institution will compare favorably with that of other States.

Anti-Tuberculosis Leagues and Camps have been organized in nearly all the Northern and Eastern cities and the work they have accomplished is marvelous, not only in a practical way, by the establishment of dispensaries and camps, but also in an educative way through lectures and circulars in which the public is warned of the dangers of this disease and what methods can be employed to prevent its spread and means to cause its cure. Here in the South this question is arousing widespread interest and in Atlanta the Anti-Tuberculosis and Visiting Nurse Association has now a free dispensary where a large number of patients are treated and who are visited in their homes by the nurses, who give them practical instructions as to ventilation and means whereby infection to other members of the family is prevented. This Association is also endeavoring to induce

the city to establish a Tuberculosis camp. Through its efforts the city and county aided in bringing the Tuberculosis Exhibit to the city and we are sure that Atlanta will be greatly benefited by it.

To us in the South it has been a well known fact that Tuberculosis is rapidly increasing among the colored race. Before the Civil War this disease was almost unknown amongst them, for they were well-fed, well-housed and all freedom all this changed. Ill-fed in crowded, poorly ventilated quarters, Tuberculosis soon showed itself and has spread so rapidly that it is not only a menace to the negro but also to the white people who employ them as cooks, nurses, maids, etc. In many instances the family laundry is taken to the negro dwellings where one or more consumptives are found. The Federal Government recognizing this source of infection, at a recent colored convention held in Savannah had a medical officer of the U. S. M. H. & P. H. Service address it on Tuberculosis and aid them in the formation of a Colored State Anti-Tuberculosis League, the first in existence. The members were very enthusiastic and expect to form branch societies in each county and good results may be expected from them.

In a paper read before this Association on the Home Treatment of Tuberculosis the writer advocated sanitorium treatment as the most reliable, as patients were then under the constant supervision of the physician, but unfortunately but few can afford this treatment and a State sanitorium can take care of only a few. In choosing a sanitorium I would advise the patient to select one in his own community, as such patients will do better after leaving than those cured in a climate dissimilar to their own. Patients can be cured in any climate, the main factors in the cure being fresh air, sunshine, nourishing food and rest.

In looking over my case book I thought it would interest the members of this Association were I to report the conditions of patients who had had only home treatment and make a comparison between their present condition and that

when first seen by me. All are patients who were seen at least seven years ago for the first time. In all the diagnosis was confirmed by the microscopic examination of the sputum. It was not an easy task to make these examinations, as in the course of years many had moved away and others, although living here, could not be located.

1. Male, single, 24 years of age. First consulted me in 1896. Family history good—both parents and ten brothers and sisters living and enjoying good health. Had always been well until a few months ago, when he noticed that he became tired easily, had a slight cough, loss of appetite, loss of weight, no night sweats. For several days his sputum was tinged with blood.

Examination: 5 feet 9 inches tall, weighed 130 pounds. Examination chest: On percussion dullness over both apices anteriorly and posteriorly; auscultation, roughened breathing, no rales present. Six microscopic examinations of sputum were made; all were negative except the last. As patient's occupation was an indoor one he was advised to make a change, which he did. He was advised to occupy a bedroom alone and careful instruction as to ventilation, sanitary precautions, fresh air, nourishing food and rest given him. He was induced to eat twelve to sixteen raw eggs daily, also large quantities of milk and cream. He improved rapidly and soon appeared to be well. In 1900 he married and shortly thereafter went abroad. While in Europe he was examined by five or six authorities, some of whom stated he had Tuberculosis, while the others stated as positively that he was free from that disease. He remained abroad for several months and returning had a hemorrhage of the lungs on board the ship. One week later a second severe hemorrhage occurred in Atlanta. Absolute rest soon brought on an improvement, but at the end of two months he had a severe attack of typhoid fever. Dr. J. B. Baird saw him in consultation, examined his chest carefully but could find no dullness. He gradually recovered. Three years later while celebrating Christmas Eve he suddenly be-

came ill and had an intense hemorrhage from the bowels. During the night three more hemorrhages occurred and he almost collapsed, but under treatment he gradually recovered his strength. Since then he has steadily gained in weight (now 155 lbs.) and a physical examination of the chest shows the same to be normal. Microscopic examination of sputum was negative. During the past two years he has been examined by three of the largest insurance companies and each one issued to him a large policy. Therefore, after a period of thirteen years we can consider him as cured.

2. Female, 32, married, mother of six children. Was first seen in 1899. Family history bad, as a brother, sister and several cousins died of Tuberculosis. Has been sick for two years with cough, loss of weight, night sweats and some fever. Has frequently had hemorrhages from the lungs. Microscopic examination of the sputum is positive. Physical examination: On percussion, marked dullness both anteriorly and posteriorly over both lungs from the apices to the second rib. On auscultation, fine and coarse moist rales heard. Family was advised to move to the suburbs and careful instructions as to fresh air, nourishment, etc., given. Was advised to sleep alone and to remain out of doors as much as possible. In 1901 she became pregnant and passed through her confinement without any difficulty. Gradually she improved in strength and the hemorrhages became more infrequent. During the past two years she has had no hemorrhages and has improved sufficiently to be able to look after her household. A physical examination still shows dullness over both apices. A microscopic examination of sputum is positive, but only a few bacilli present. States she feels better than she has in years.

3. Female, age 26, married, mother of four children. Was first seen in 1900. Family history good, both parents, brothers and sisters living and in good health. When first seen, complained of cough, pain in chest, loss of weight and loss of appetite. Physical examination: On percussion, dullness at left apex, both anteriorly and posteriorly.

Auscultation, small moist rales heard. Expectoration has sweetish taste. Microscopic examination of sputum positive. She was advised to sleep alone and careful instructions regarding ventilation, fresh air, nourishment and rest given. Began to improve at once and in a short time was able to resume her household duties. A recent examination shows a slight dullness over left apex but no rales heard. Microscopic examination of sputum negative. States she feels perfectly well.

4. Female, age 28, mother of four children. First seen in 1901. Family history good. Had not been well for several months, complaining of cough, loss of weight, night sweats. When called to see her she had a hemorrhage from the lungs. Physical examination: Dullness over upper lobes of both lungs. Percussion elicits pain, which is characteristic. Auscultation, fine moist rales heard. Microscopic examination of sputum positive. She was given the usual instructions regarding diet, ventilation, fresh air, etc. Began to improve and since 1902 has had no hemorrhage or cough. A recent examination shows no dullness on percussion and normal breathing on auscultation. Microscopic examination of sputum negative. States she is well and never enjoyed better health than now.

5. Male, age 32, piano-tuner, married. First seen in 1902. Family history good. Had a cough for some time and thought same was caused by the inhalation of dust when cleaning pianos. There was also some loss of weight and appetite. Physical examination: Dullness over both apices on percussion and fine moist rales heard on auscultation. Examination of sputum positive. As he was unwilling to give up his profession was advised to use a respirator during his work. The same instructions as to fresh air, diet, etc., were given him and in eight months he regained his weight, the cough disappeared and he was much improved. During the past three years he divided his time between Florida and Georgia, summers here and winters in Florida. A recent

examination shows chest normal and sputum examination negative.

6. Male, age 22, single, architect. First seen in 1902. Family history good. Has enjoyed good health until a few months ago, when he began to feel tired. Was losing weight, had a cough and at times night sweats. First consulted me on account of hemorrhage from the lungs. Physical examination: Percussion, dullness at both apices, fine moist rales on auscultation. Microscopic examination of sputum positive. As his work was almost entirely office work he was advised to devote his time to outside work, which he did. The usual instructions regarding diet, fresh air, etc., given and soon marked improvement took place. Three years ago he married. About a year ago he again consulted me for what he called a run-down condition and I again found dullness at both apices. It seems that he was again compelled to do office work and this confinement caused a relapse. A suggestion that he move to the country was accepted by him and he lives on a small farm near the city. Has arranged to sleep out of doors and during the past six months has greatly improved. The dullness over apices has almost disappeared. The sputum still shows bacilli present but in greatly decreased numbers.

VACCINES IN THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS.

BY E. C. THRASH, M. D., ATLANTA.

The time has arrived in medical science when, to wait for the finding of positive physical signs, or for the tubercle bacilli to appear in the sputa before making a definite diagnosis of Tuberculosis, is a dereliction on the part of the attending physician; and when he waits for these, he has probably lost the opportunity to save his patient's life. If I were asked to name the three most important things in the treatment of tuberculosis, I would say: Early diagnosis, Early diagnosis, Early diagnosis. I mean by this to say that it is emphatically important to make the diagnosis in the very incipiency of this disease. It is only within recent years that laboratory methods have come to our aid and enabled us to do this.

The vaccines, together with clinical symptoms and history, enable us to make a diagnosis of practically every case of tuberculosis in its very beginning. The vaccines, however, only reveal its presence; they do not locate the focus of infection, or show whether it is in the stage of activity or latency; nor does it indicate whether the disease is far advanced, or has just begun. These facts can, as a rule, be worked out from physical examination and clinical history. Vaccines give positive reaction in about 90% of all cases of tuberculosis, and those cases, where the reaction is not obtained, are generally ones far advanced, where the toxines have so poisoned the cells and their derivatives that they can not put up any resistance in combating the irritation produced by these vaccines, and for that reason no reaction is shown. From this it can be seen that all cases can be diagnosed from the vaccines, except those where the diagnosis is obvious.

As a diagnostic means, only tuberculin O is used, and we therefore have but to discuss the methods of its use. There are four ways in which this tuberculin is administered for the purpose of diagnosis:

First, by hypodermic injection, beginning with 5/10 MG., watching the temperature closely, and gradually increasing daily, or every other day, until the dose reaches from 5 to 10 MG. A rise in temperature, general malaise, headache, darting pains, aching of bones, and so forth, are the symptoms of positive reaction. It is never safe, however, to say that the reaction is positive, unless there is an elevation of temperature from 1 to 3 degrees. This may not be reached, however, until 8 or 10 MG. to the dose are being administered. There are two serious objections to this method of administration. One is, it cannot be used where there is an elevation of temperature, because one is not able to say then whether the elevation is due to toxemia, or to reaction from the tuberculin. The other objection is, that violent reactions interfere very much in the after-treatment of this disease, where one wishes to administer the vaccines for therapeutic purposes, as reactions are always harmful, and often a sensitiveness to tuberculin is established that makes it almost impossible to administer this remedy successfully later.

The second method is by instilling a few drops of a ½ to 1% of tuberculin O in the eye. This is repeated in the other eye upon the second day, if no reaction is established. Positive results are indicated by a burning sensation, slight swelling of the mucus membrane, itching and slight inflammation. This procedure is contra-indicated where there is a conjunctivitis. The objection to this is a serious one, and that is, in about one case out of every one or two hundred, there is a violent conjunctivitis established, the relief of which is quite difficult, and the symptom, in some instances, may even be alarming.

The third method is simply an ointment of tuberculin applied to the thin skin by rubbing it in thoroughly. A

positive reaction is indicated by a redness and slight swelling of the skin. The objection of this plan of administration is that you get results in a smaller percentage of cases than is obtained by either of the others.

The fourth is *par excellence* the ideal one; and that is, the application of a 10 to 25% of tuberculin to an abraded surface, this being done exactly as that of vaccination for smallpox. Mulford puts up these solutions in sealed tubes, ready for use. A positive reaction is indicated by a redness, small blebs being formed around the area of abrasion. In fact, all those conditions are present that characterize acute inflammation. Upon the second or third day there is a decided hardening, indicating a round-cell exudate around the abraded area. These processes subside in from five to ten days. This method to my mind is ideal. If it has any objections I have not found them. I have never failed to get a reaction in this way when I could obtain it in any other of the three. I have practically abandoned all the others. There is sometimes a slight redness in negative cases that should not be mistaken for a reaction.

In taking up the therapeutic value of these vaccines, we should take off our hats to the pathological bacteriological researchers. Few of us stop to think that within the last ten thousand years, all men, in all the world, in their study of all diseases, and the application of the various remedies in these diseases, have learned positively to cure but two. And they have given us only two drugs that will absolutely cure a disease. The studies in bacteriology and the principles of immunity are at present in their infancy, yet within the past two decades these studies have developed either cures, or preventions, or both, for diphtheria, smallpox, tuberculosis, anthrax, hydrophobia, meningitis, acne, and tetanus. In parallelling these two methods of treating disease we are thrilled with awe at the magnificence of the work that has been and is being done by scientific men in vaccine therapy. These vaccines certainly are precursors of a new era in medical science. Nothing of value that develops from thought

springs into existence immediately perfected. To illustrate, Watts' first steam engine was crude and worthless, yet it contained the germ of mechanism that would ultimately drive all the wheels of the universe; so Koch's first tuberculin, with his manner of administration, was of a little value; yet he planted seeds that no doubt will ultimately culminate in the complete mastery of the handling of this deadly malady. There has been much improvement in tuberculin itself, but the greatest advancement has been made in its proper administration. Quite a great number of vaccines have been made from tubercle bacilli by both scientific and pseudo-scientific men, but they all fall under one of the following heads:

1. A solution of toxines, made by growing the organisms upon glycerine bouillon, and filtering. This filtrate is principally exotoxines. This tuberculin was first made by Koch, and is now called Tuberculin O.

2. A solution of the soluble portions of the organisms made by washing them, grinding them and putting them in a watery solution, and filtering without heat. This is bouillon filtrate.

3. The organisms are washed, ground and suspended in the form of an emulsion, after which they are heated for one hour at a temperature of 60 per cent. C. This is bacilin emulsion.

The fourth is made in the same manner, except that it is not heated. The latter is not entirely safe, because living organisms might be left after the grinding process.

The question now arises, which one of these is best for the cure of the disease? An answer could be given in a scientific way only by going into a full discussion of immunity, and the scope of this paper would forbid such a procedure. Suffice it, however, to say, that the factors involved in infectious processes are bacteriæmia and toxæmia. The forces in the cells and cell derivatives of the body counteracting these factors are bacteriolysis, agglutinins, precipitins, opsonins, phagacytosis and anti-toxines.

All these forces are engaged in the destruction of the bacteria themselves, except the last, whose function it is to precipitate and destroy toxines. It has been demonstrated that all of these forces are stimulated by their acting upon attenuated bacteria, and they are all weakened and held in abeyance by the presence in the body of virulent organisms. It can be already seen from this that the purpose of administering vaccines is to place in the fluids of the body attenuated and weakened organisms, so that the immunizing forces may be stimulated to greater activity by practicing upon these organisms just as a "Varsity" team gets its training from practicing with the "scrubs" before it meets its opponent from other colleges. We can see, by referring to these different vaccines, that the first tuberculin O contains products to stimulate only the anti-toxin properties of the body fluids, whereas, the others contain the products from the whole organism and therefore they would stimulate not only the anti-toxines but the activities of all of the immunizing forces above mentioned. This would naturally eliminate tuberculin O as a therapeutic agent. Practical experience, as well as theory, has established this fact. Tuberculin O does not compare in value as an agent for treating the disease to any of the other three. I have used them all, and from my own experience I have found that bacilin emulsion gives much better result than any others. I always use that which has been heated to 60 per cent. The bouillon filtrate comes second to this.

It is much milder, and reactions do not appear from the use of it so often as from the bacilin emulsions. I am now using equal parts of bacilin emulsion and bouillon filtrate, with good results. Where I have a patient who has become supersensitive to the effects of tuberculin, I use the bouillon filtrate exclusively.

Upon taking up the dosage and manner of administering the vaccines, we come to the point upon which eminent success or dire failure hinges. In the use of tubercular vaccines, we must not lose sight of the fact that we are handling

a two-edged sword that is an instrument that will do much harm badly handled, but is pre-eminently for good in proper hands. It is somteimes said that "no reaction, means no cure." I would not so express it, but would say many reactions mean bad results and possibly death. My patients never do so well after decided reactions as they did before. This is the objection before mentioned in the hyperdermatic use of tuberculin O for diagnostic purposes. Dosages must always be regulated by the condition of the patient in hand, and effects noted from each successive dose. Febrile cases should have extremely minute doses. Where the temperature runs above 100 deg. at any time during the day, the initial dose should be not greater than 1/40000th of the standard solution containing .5 MG. of dry tuberculin per c. c., MG., increasing cautiously from day to day. Mildly febrile cases, where the temperature does not run over 100 deg., should have an initial dose of 1/10000th, cautiously increasing. Afebrile cases, as a rule, will tolerate an initial dose of 1/1000th, MG. These doses should be given at intervals of from two to four days, increasing gradually, from day to day, producing a tolerance for quantities ranging from 10 to 20 MG. after a period of six to eight months' treatment.

Many patients will acquire tolerance in two or three months, where 50 MG. can be administered without a reaction, while others will become more and more sensitive and will never acquire tolerance. This latter condition, however, is quite rare, and almost every patient can have tuberculin increased, if it is done properly, until the maximum dose can be administered. The reactions are indicated by soreness of the area of puncture, redness around the puncture, darting pains over the body, aching in the bones, headache, general malaise, feeling of indifference and fever. All except the last mentioned are signals to diminish the doses. Fever is a signal to leave off treatment entirely until it subsides. After a reaction is brought about and the

patient again gets in condition to take the treatment, it should be begun with much smaller doses than were being given before the reaction. Only experience enables one to handle these vaccines to the best advantage and get the maximum good from their use.

In considering the conditions under which vaccines can be used, we would put the cases that are amenable to treatment under three heads: First, those that respond most readily, which are tubercular peritonitis, tuberculosis of the glands, bones, skin and all of the other firmer structures of the body. The second group is that of incipient tuberculosis of the lungs, and fibroid phthisis, where the resistance is just sufficiently great to prevent the advancement of the processes, yet the patient does not get well. Almost all of this class of cases respond well to treatment. The third group includes moderately advanced acute and chronic tuberculosis of the lungs. In most of the cases in this class the disease can be arrested. All three of these classes respond more or less well to tuberculin. Even in the far advanced cases, where the patient is putting up a good fight, has good resistance, though he may have fever running as high as 100 to 101 daily, with even cavities, tuberculin cautiously administered will prove of value. It is worthless where the invasion is quite rapid, fever high, toxemia profound, patient going down rapidly; or in chronic conditions where cavities are formed with mixed infections, fever, and no resistance.

In discussing "cures" I would insist that the patient be impressed that he is not usually cured but the processes are only arrested; yet, if he will carry out the hygienic and dietetic instructions through life, that have brought about this arrest, it will never become active again. But, should he take up his former habits and begin to live as he was living when he developed tuberculosis, it will again become active and death then will be almost inevitable. While many sufferers from tuberculosis are completely cured they are afterwards more susceptible, and for this reason it is a mis-

take on the part of physicians to dismiss their patients after six or eight or twelve months, telling them they are well. They then lay aside all restraint, go back to their former mode of living and the disease often becomes active the second time.

Summary.

Von Pirquet's skin-method is decidedly the best for diagnostic purposes. Bacilin emulsion gives best results as a therapeutic agent. Bacilin emulsion, combined equally with bouillon filtrate, has some advantages over, in many cases, either one alone. Reactions should always be avoided, but if they should occur there should be more caution used in the administration of tuberculin afterwards, for many reactions mean supersensitiveness, when tuberculin should be abandoned entirely. One should always be cautious in administering vaccines, being careful to always administer a sufficiently small dose. The cases that respond best to treatment are the ones that have tubercular processes in the firmer tissues. Properly selected febrile cases respond well to treatment. Other lines of treatment should not be neglected when one is administering tuberculin. Tuberculosis in many instances is arrested and not cured. It will remain arrested if the sufferer conducts himself properly.

Discussion.

Dr. Geo. M. Niles, Atlanta: What experience I have with tuberculosis is only incidental, but I think it is too important a subject to be allowed to pass without discussion. There are several points brought out in this symposium which I think will be of great interest and upon which stress should be laid; for instance, Dr. Thrash's remarks as to the methods for the early detection of tuberculosis. Not only the profession but the people are waking up to the necessity of detecting tuberculosis in the incipient stage and Dr. Thrash has very well illustrated some of the important

means to this end. Dr. Sommerfield is a man of parts, is well known in the city where I practice, and he is having good results with the home treatment. I also especially wish to commend Dr. Brown's paper in regard to the State care of the tuberculous. We are waking up to the great importance of tuberculosis as an economic factor in our commonwealth. It needs studying just as much as the subject of crime. I am glad that Dr. Brown takes a broad view in regard to the matter of State aid. While Dr. Brown needs no introduction to this Association, I wish to remind you that he is now a member-elect of the coming Legislature and is in a position to be of great aid in furthering this matter. We know if he puts his shoulder to the wheel something is going to happen, and I think we are to be congratulated in having Dr. Brown's help in a public capacity on this question; and I feel that if the profession will lend its support to his worthy endeavors to bring this subject before the people of the State as well as the profession great results will be attained.

Dr. L. M. Warfield, Savannah: I happen to have been much interested in this subject for the past several years and there are a few points that seem very important to me in regard to this whole question, not only from a municipal standpoint, but from that of the individual. I believe we should have public sanitaria for the indigent cases, but the question as to whether it should be one large sanitarium placed somewhere in the State or a group of smaller ones, I don't think has as yet been settled, but my own personal feeling is that every State, as Dr. Brown has suggested, should have its own sanitarium for the indigent. They should be arranged so that not only second and third cases should be taken care of but also the incipient cases. I don't believe they should be combined in the same building, for we all recognize the infectiousness of the disease.

In regard to the special tests and the question of early diagnosis, I agree perfectly with Dr. Thrash that the three most important things to remember are early diagnosis, early

diagnosis and early diagnosis. In regard to the new tests I have used the von Pirquet is the best. I notice that he uses a 10 to 25% solution and when first employing the test I did; in a conversation with von Pirquet last year, he said he used the crude tuberculin, the old tuberculin of Koch, and that while you could use the 25% solution, he believed the crude tuberculine was the best. Of course, Von Pirquet is the man to whom we look for the best method because he himself was the originator, but it seems that the experience of men shows that the 25% solution is just as good as the crude tuberculin. Now I believe it is not necessary for a tuberculin reaction to have fever, headache and other constitutional symptoms. My experience goes to show, and I think von Pirquet has also told us this, that when the cutaneous reaction is definitely positive, a positive "stick reaction," a puncture with 1 MG. O. T. just beneath the skin, provided it is red, firm and hard, without constitutional reaction, tells us positively that the individual is the subject of active tuberculosis; the question of locality is a matter for physical examination.

Personally I have used almost exclusively tuberculin R of Koch and my results have been very good. I must confess, however, that there is always a doubt as to whether the case would not have done just as well if I had done everything else and left the tuberculin out, but it does seem to prevent relapses at any rate and that in itself is of great value.

Dr. C. M. Curtis, College Park: It is very encouraging to all of us general practitioners to hear the men who are making a special study of the disease that has been so long considered a disease that could not be cured say that it can be cured and that a great many cases are being cured. It seems to be absolutely demonstrated that tuberculin is a successful remedy when properly used. It has been demonstrated by actual practice that correct habits, outdoor life, proper feeding and rest are also curing a great many people who follow that treatment. Now all these things having been demonstrated as facts, it is well for us to turn our at-

tention to the protection of the people who have not been infected and I think our legislators will look more to that in the future. The time will soon come when it will be absolutely against the law for a tuberculous patient to expectorate in any public place; they will be compelled to take care of their expectoration. I think, too, that the time is not far distant when every State and county will have a place for taking care of these patients. When these things are brought about the disease will shortly become one of the past.

Dr. H. R Slack, LaGrange: The papers we have heard and which we are discussing seem to come in about this order: Dr. Thrash emphasizes the importance of early discovery of the disease, Dr. Sommerfield believes in the home treatment and Dr. Brown in the treatment by the State and municipality. We doubtless all agree very thoroughly with the essayists. This is one subject upon which the medical profession seems to be a unit. The only question, I think, now that the medical profession is divided on is as to which one of the tuberculins is best and the dose. I had the pleasure of attending the International Congress on Tuberculosis in Washington and that was practically the only point of contention; that and whether bovine tuberculosis can be conveyed to the human being. The consensus of opinion there expressed was that the general dose as administered was too large and that we should go very slowly; that when we get decided reaction we have often done our patient irreparable injury. Quite a number of physicians who have treated tuberculosis successfully do not use tuberculin at all. They employ strychnia, rest, fresh air, eggs and milk. In one institution near Washington they do not use tuberculin except for diagnostic purposes; Sternberg doesn't use it in his institution and we know that he has great knowledge of bacteriology. Yet those who oppose its use are those who have not used it and the opinion of one who has not used a thing is not to be put in the balance of

one who has. We must take the experience of those who have used the method.

Dr. S. A. Visanska, Atlanta: This subject of tuberculosis is one of great importance, not only from the standpoint of the adult, but from that of the future generations. While a great many do not believe in direct transmission of the disease, it has been recently proven that it may be directly transmitted from parent to child. Holt of New York has recorded several cases proven by autopsy where the child was too young for it to have acquired the disease. We must believe that it may be transmitted and I would like to see a law passed to the effect that all persons applying for marriage licenses should be required to have a certificate from a reputable physician showing a clean bill of health; this should not only apply to tuberculosis, but to specific taint. If we want to raise healthy children we must have healthy parents. When it is shown that children are born every day whose parents had tuberculosis before the child was born and before they were married, I think it is a crying shame.

As regards bovine tuberculosis, at the International Congress at Washington last fall I think it was pretty well agreed that bovine tuberculosis is transmissible and that therefore it is necessary to have all cows tested with tuberculin, especially where the milk is to be used for young infants. If we are to have prevention it must be in every way, not only from the sputum of patients but from transmission by these other means.

Dr. O. G. Singleton, Fort Valley: I should like to make this suggestion, while raising no opposition to any theories advanced by the essayist, that though we have institutions at the State's expense for the care of these cases, how are we going to get the patients there? Many men are unable to lose time from the home and family and work. They will sacrifice their own lives rather than submit to medical examination, even when convinced in their own minds that they have the disease and are fit subjects for treatment at the institutions. The man may feel that he doesn't want

to let the members of his family know, hoping against hope that something may turn up to bring relief. Would it not be well therefore to consider the advisability of suggesting to the legislative body that some steps be taken to determine that one is infected when the disease is suspected.

Dr. T. J. Charlton, Savannah: I have been much impressed with the importance given to the question of early diagnosis and the best methods for the early detection of tuberculosis. Now I think in the study of tuberculosis there is one thing to which we should call attention strongly, and that is that the climate of Colorado, New Mexico and Arizona doesn't of itself cure tuberculosis. There is a general opinion among the people that all they have to do is to go to these places. Every year hundreds of cases go out from Georgia who are unfit; they haven't the money and while it may be advantageous to have a climate which is favorable to recovery, they lack the means to take care of themselves properly and thousands of them die. We must impress upon the people of Georgia that we are able to get the necessary treatment for recovery right here at home as well as in Colorado and these other places. There is no use in having an early diagnosis for these people if we can not prevent them from going out West and dying like sheep.

Dr. H. McHatton, Macon: I have been very glad to hear such a full and free discussion of this subject.

The records of this Association will show that I have taken part in the discussions of this subject for the past twenty-five years. I read a paper some ten or twelve years ago in which I stated that the three main factors in any case were early diagnosis, personal equation and financial ability. Early diagnosis is the most important of all. It does not make any difference what methods of treatment we use, the future of the average tuberculous case depends upon the rank and file of the profession and their early diagnosis. They are the men to discover the condition and indicate what treatment shall be taken. A great deal of the lack of early diagnosis is due to lack of care and thor-

oughness in examination. No man can expect to diagnose an incipient case in one or two examinations. Our men are scattered through the country and lack many facilities. If they will use every method at their command, which includes physical examinations, the scales and the thermometer, they can make an early diagnosis in every case. Of course the men in the country are not in a position to avail themselves of all the modern facilities and methods, but they have these three reliable and exact means at their command always.

I read a paper some time ago before this Association in which I stated that we had in Georgia as good a climate for the treatment of tuberculosis as could be found anywhere in the world. I have not sent a case out of the State for twenty years, and never expect to send another one. The whole thing revolves upon early diagnosis. If a man's work is necessary to the support of his family, it is of course difficult to get him to give up, and we simply have to do the best we can in each individual case. The disease is no longer in the first stage when the bacilli are found in the sputum; it is then in the second stage. A great many cases never show the bacilli in the sputum at all. If we depend upon the physical signs, the use of the thermometer and scales, we will certainly be able to make early diagnoses in most cases.

Dr. E. C. Thrash, Atlanta: I think Dr. Warfield possibly misunderstood me in my reference to the reaction in tuberculosis. I was referring to the old administration where we got such reactions. I did not mean that we get that reaction with the later methods. We get only the surface changes, but with the deep hypodermic injections it was different.

As to Dr. Visanska's idea of tuberculosis being transmitted from mother to child, any one who will study cell mytosis and how the embryo is formed, will readily see that it would be impossible for the tubercle bacilli to be carried by the spermatozoa or ovum and that is the only way it can

be inherited. The tubercle bacillus is a great deal bigger than the chromotomes and you would have a blasted cell if there were tubercle bacilli in the incomplete male or female element. You might get transmission from mother to child in utero, but that is the same as you would get extrauterine. The tubercle bacilli may pass through the placenta but then the child has not inherited it but has had it transmitted through the mother's circulation just as she might transmit it by coughing in the child's face while it is nursing at the breast.

I would like to state in regard to sanitaria and hospitals, that they are by all means the best method of handling this disease but, while I would not take a single laurel from them, it is only a small percentage of the cases that have access to them and it will be a long time before they can mean a great deal in the treatment of this disease. The only way to handle the disease is for every physician to be a living bulwark in his community and be able to handle every case that comes before him properly. In that way we can check the progress of the disease but it cannot be done in any other way. The great trouble is that the patient comes to the doctor and he says, "You only have a little bronchitis or cold," and then after a while he sends the sputum to the State Board, gets a positive report and then when cavities have formed it makes little difference where he sends the patient. The diagnosis should be made before the sputum ever contains the bacilli and the only way for the physician to make such early diagnosis is to prepare himself in the proper manner. He must make himself a good diagnostician.

SOME REMARKS ON THE PROPER USE OF NUTS AS FOOD.

BY GEO. M. NILES, M. D., ATLANTA.

Up to a comparatively recent date nuts were considered by most people either a luxury, or as tit-bits to be eaten out of hand at odd times. They had no fixed standing as to food value, often being unjustly blamed for indigestion brought on by other causes.

During the last two decades, however, both from a dietetic and an economic standpoint, they are becoming more appreciated, as evidenced by their increased consumption.

With this greatly augmented demand the Southern States are much concerned, for two of the principal nuts, the peanut and pecan, are largely Southern products.

It may surprise this Association to be informed that the total quantity of nuts imported into the United States in 1907 was 86,238,000 pounds, with a value of over six million dollars. From Georgia, Virginia and Tennessee the yield of peanuts alone was 225,000,000 pounds. The exact yield of pecans could not be obtained, but it was large; and when the many groves, now growing in Georgia, come into bearing, the pecan crop alone will hold a respectable place among the resources of our State.

The increased cost of the various meats exacted by the packing trusts has quickened interest in the economic value of nuts, many special nut foods, such as malted nuts, nut butters, and meat substitutes, with nuts as a basis, being now on the market at reasonable prices.

Again there is a fairly large number of our population who, for different reasons, abstain from meat. In this connection might be mentioned the Seventh Day Adventists, a growing body in the South, whose teachings are opposed to the use of meat in any form.

I feel, therefore, that a brief survey of this somewhat neglected field will be of both interest and profit to my hearers.

The term "nut" is applied somewhat loosely to certain varieties of fruits or parts of fruits, and implies a more or less fibrous covering surrounding a kernel or meat. They are produced in the most diverse manners, from vine-like plants, as the peanut, up to the giant pine or beech. One variety, the water chestnut, is supplied by a water plant.

To enter into a description of the many native and imported nuts available for food consumption would exceed the limits of this paper, so I shall consider only a few of the best known.

The flavor of nuts depends principally on the oils they contain, though in some there are specific flavoring agents. Some of these oily constituents easily become rancid, imparting a most disagreeable taste or odor.

The peculiar flavor of the roasted peanut is due to browned oils and starches. The pungent or bitter taste of almonds, as well as peach and plum pits, a family botanically allied, is due to a cyanic acid yielding glucosid. The chestnut, especially when roasted, has a characteristic starchy taste, betokening its main ingredient. The flavor of nuts, as well as their size, can be greatly improved by judicious cultivation.

The composition of nuts has been investigated at several of the agricultural experiment stations in this country, and I wish in this connection to acknowledge valuable data furnished me by Prof. M. E. Jaffa, of the California Station, and Mr. Charles D. Woods, of the Maine Station.

The following shows the composition of some of the nuts most used, as compared with a few of the staple food products:

Kinds of Food	Refuse	Edible Portion						
		Water	Protein	Fat	Carbohydrates		Ash.	Fuel Value per pound
					Sugar, Starch, etc.	Crude fiber		
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Calor's
Brazil nut	49.35	4.7	17.4	65.0	5.7	3.9	3.3	3.120
Chestnut	23.40	6.1	7.8	8.8	70.1	2.9	2.4	1.840
Cocoanut	34.66	13.0	6.6	56.2	13.7	8.9	1.6	2.840
Hickory nut	62.20	3.7	15.4	67.4	11.4	2.1	2.2	3.345
Peanut	27.04	7.4	29.8	43.5	14.7	2.4	2.2	2.610
Pecan	50.10	3.4	12.1	70.7	8.5	3.7	1.6	3,300
Walnut	58.80	3.4	18.2	60.7	13.7	2.3	1.7	30.75
Beefsteak (round)	.....	65.5	19.8	13.6	.....	.....	1.1	.950
Cheese	.....	27.4	27.7	36.8	4.1	.....	3.7	2.145
Eggs, boiled	11.20	65,0	12.4	10.7	.....	.....	.7	.680
White bread	.....	35.3	9.2	1.3	55.2	.5	1.1	1.215
Beans, dried	.....	12.6	22.5	1.8	55.6	4.4	3.5	1.605
Potatoes	20.0	78.3	2.2	.1	18.0	.4	1.0	.385

You will observe from this comparison that nuts, even the starchy chestnuts, furnish much more fuel value per pound than either beef, eggs or cheese.

They are rich in protein and fat, containing some starch and but little water. The pecan is the richest in fat, though the Brazil nut, hickory nut and walnut are not far behind. In protein the peanut easily leads, containing 29.8 per cent. per pound, while round steak contains only 19.8 per cent. The chestnut has much the largest carbohydrate content, 73 per cent., though the peanut shows nearly 18 per cent.

Nuts are also well supplied with mineral matter. The ash of the walnut, almond, etc., is rich in phosphoric acid, comparing favorably with some of the cereals.

As to the digestibility of nuts, I am free to admit that they are in some disrepute. The cause of this, however, is mainly due either to insufficient mastication, to crowding the stomach with them after a hearty meal, or to eating them at unseasonable hours.

When they are accorded a proper place in the dietary, doubtless they will soon overcome this disfavor.

Prof. Jaffa reports on a number of investigations carried on with a fruit and nut diet, some on vegetarians, some on fruitarians, and some on subjects who had previously lived on an ordinary mixed regime. The general results as to the co-efficients of digestibility of nuts showed protein 90

per cent., fat 95 per cent., and carbohydrates 97 per cent.

As most of the experiments recorded at the California and Maine experiment stations comprised some nuts not in general use in the Southern States, I desired to form an intelligent opinion as to the digestibility and economic value of the peanut, the pecan, and the Brazil nut, these three being the ones most in favor with us.

For this purpose I enlisted the aid of Messrs. J. I. Matthews, J. G. Devane, W. L. Morris, G. D. Thompson, S. A. Kirkland and E. S. Deaver, all these being students at the Atlanta School of Medicine.

These young men voluntarily offered their co-operation, and deserve much credit for the painstaking manner in which they followed my directions.

They were allowed a sufficiency of carbohydrates, as bread and fruit, but took no meat, eggs, butter, peas or beans. Their digestive functions, which were tested before going on this diet, were found to be normal. Each day they were weighed, their general condition was noted, and their urine and feces carefully examined.

This diet was kept up four days with five of them, and three days with Deaver, this young man becoming somewhat upset and nauseated at the end of that time. He discontinued the nuts by my direction, though entirely willing to go on with them.

The following table will give only the main findings, as an elaboration of all the figures for each man each day would be tedious:

Name	Nuts	No. days	Pounds used	Weight at start	Weight at finish	Cost	Remarks
Devane	Pecan	4	3¾	140.5 ozs.	141.10 ozs.	75c.	Normal condition
Morris	Pecan	4	4	159 11 "	158.6 "	80c.	Normal condition
Thompson	Brazil	4	4¼	140 4 "	140.1 "	85c.	Normal condition
Deaver	Brazil	3	2¾	168 5 "	168.0 "	55c.	Somewhat naus't'd
Kirkland	Peanuts	4	4	135 6 "	133 14 "	80c.	Normal condition
Matthews	Peanuts	4	3¾	160.8 "	162.4 "	75c.	Normal condition

It will be noted that two gained in weight; that three remained about the same, there being a loss of a few ounces;

while only one lost weight appreciably, that being only one and a half pounds. That the calories furnished were sufficient showed in their feeling of strength and buoyancy. They had no disturbance of either stomach or intestinal function, with the slight exception mentioned.

The co-efficients of digestibility, as shown by the feces, were protein 93 per cent., fat 90 per cent., sugar, starch, etc., 93 per cent.

During each day of the experiment these young men seemed "fit" in every way; and when the cost of these results, bearing in mind the amount of heat and energy produced, is compared with the cost of a given amount of meat necessary to generate the same heat and energy, it is enough to make a thoughtful observer sit up and take notice.

As has been shown by the foregoing, as well as proved by other observers, the rich content of protein and fat in nuts can be excellently assimilated, but their place in the diet, like that of any other concentrated food, should be carefully regulated.

Any diet, to be normally propelled through the digestive canal, should possess a certain bulkiness; and for this reason nuts can be best used along with foods containing a large proportion of cellulose, such as fruits, vegetables, breads, crackers, etc.

Always remember that they should constitute an integral part of the menu, and not be superimposed on an already sufficient meal.

It is told of a Georgia merchant that, on a recent trip to New York, he was dined and wined at frequent intervals during the day and night by some of his commercial friends. Under the seductive influence of tempting viands, good fellowship and sundry mixed drinks, he taxed his stomach to a wonderful degree, and just before retiring he partook of a small bunch of grapes. In a few hours the pains of an outraged digestive apparatus forced him to call in a physician, whom he gravely informed that some *grapes*, eaten the night before, seemed to actually poison him.

The moral is obvious.

The thorough mastication of nuts is also essential, the co-offiecient of digestibility being increased, and the liability to discomfort being decreased by care in this particular.

The popular belief that salt added to nuts improves their digestibility is not borne out by investigation, though, to many persons, salt renders them more palatable.

The limits of this paper will not permit me to enter into details regarding the specific uses of different nuts and nut preparations in varying conditions of human need.

Their nutritious qualities have been taken advantage of by numerous institutions and individuals in the building up of wasted and impoverished tissues; their charming flavors have enabled the confectioner to utilize nuts in many of the delicious sweetmeats so alluring to the maiden's heart; while the housewife and caterer have found them invaluable in the preparation of countless dainty dishes.

Let me, in conclusion, stress the fact that the vegetable proteids are free from many of the toxins with which the flesh foods abound, and that they less readily undergo putrefactive changes in the intestine. Moreover some of the purest and most readily digestible forms of fat are those derived from nuts, being provided as nut oils, or in the emulsified forms as nut butters.

People vary in their food requirements, as do stoves, furnaces, or locomotives in their fuel requirements; and, in our efforts to scientifically furnish the requisite calories, we should endeavor to increase the endurance and efficiency of the body, as well as relieve morbid states of nutrition.

Permit me, therefore, to commend to you the study of nuts and their food value, believing this subject entirely worthy of your sober consideration.

Discussion.

Dr. Geo. Brown, Atlanta: I should like to bear out the statements Dr. Niles makes. I had occasion to be under

his care a short time ago and am a living example of what this method can do. A man accustomed to eating a great deal may feel that with such a diet he is not satisfied, but this is due to the mental effect more than anything else. I think it a very valuable paper and the suggestions made in it should set us all to thinking.

Dr. L. M. WARFIELD, Savannah: I think a paper like this should not go without at least complimenting the man who has presented it to us. I know little about the subject but such a research should make every man sit up and take notice. It is an interesting subject from an economic standpoint, particularly in this day when the price of meats is soaring and the question of getting sufficient calories to carry one along is becoming a troublesome problem and when we find such a cheap substitute at hand, we should look well into the matter.

THE DOCTOR—HIS RELATION TO PUBLIC SANITATION.

BY DR. J. C. BEAUCHAMP, WILLIAMSON.

By custom, law and necessity, the doctor before receiving his degree of M. D., and passing State examinations, must possess, besides a fairly good education, a large amount of special knowledge.

This knowledge, to acquire, takes time, study and money. In fact, it is the doctor's capital stock in trade—the same as a lawyer, architect, mining, civil, mechanical, electrical engineer, or any other avocation requiring special training.

Does the doctor receive any exemption of special privileges from the State, county or municipality, over the citizen laymen? He is exempt from one form of jury duty—is subject to lunacy or coroner's jury. He pays a special tax of ten dollars for the privilege of practicing his profession. If he has any property he is required to pay as much municipal, county and State tax, as any other citizen. If his special knowledge is required for court or jury, he is forced to leave his business and impart this knowledge, which has cost him labor, time and money, without fee or reward.

It seems that the doctor does not receive any extra consideration from the general public. And yet, from the fact that the members of the medical profession only, possess adequate knowledge of health and disease, possibly a moral obligation, if not a legal one, rests upon us, to co-operate, as far as possible, in the conservation of the public health. It is a fact that some of the Southern States, including our own, have not that advanced standing in all that relates to public health, which characterizes the States of the East and West.

This state of things cannot be fairly attributed to a low

standard of the medical profession, because in point of achievement, in the various lines of strictly professional work, our doctors will compare favorably with those of other sections of the country.

The impoverished conditions of our section for a long period after the Civil War, prevented the early inauguration of any very large undertaking for the State or county governments, regarding health laws. The creation of the State Board of Health, provision for county health boards, a sanitarium for tuberculosis, are steps in the right direction. It is also probable that in the near future, the school for the training of defective or feeble-minded children will be established. None of these, however, will be the effective agents for accomplishing the purpose intended, without the sincere and earnest co-operation of every doctor who is engaged in the practice of his profession.

And that is the chief purpose of this paper—a plea for the co-operation of the profession; especially in the rural counties, where there are no large towns or cities, with their well-regulated boards of health.

Have we any reliable data on which to give the birth rate or death rate in Georgia? Can we give any correct idea as to the number of people afflicted with tuberculosis? How many cases of scarlet fever, diphtheria, typhoid fever occurs annually in the State of Georgia? Or the number of persons who die annually from each of these diseases? It is unnecessary to stress the importance of vital statistics in this presence. The locality where contagious or infectious diseases prevail, the type of disease as shown by the death rate is important knowledge. Only fifteen States in the United States are accepted by the Bureau of the Census as having sufficiently complete returns of deaths to be entitled to admission to the "registration area" of the United States.

The record of births is more difficult to secure than deaths. It has been said that the death or birth of a blooded horse or Alderney cow is at once noted in a herd book, but a human being may come into the world and go out of it without

the slightest legal note or record in many States. The efforts of a board of health for the stamping out of disease will be, in large measure, fruitless unless it knows in what locality and to what extent the disease in question is most prevalent and fatal.

Without reliable statistics of mortality results of preventive action cannot be determined.

Imperfect or partial statistics are unsatisfactory and misleading.

The Homes Commission report recently given the public, quotes from the U. S. Census of 1900, under the head of infantile mortality, as follows:

"The census of 1900 gives a list of 106 cities and towns with infantile death rates in excess of 175 (per 1000). In nine cases the rate exceeded 300; in 38 it was between 200 and 280, and in 49 it was between 175 and 200."

"Both Savannah and Atlanta are among the nine in which the rate exceeded 300. Charleston, S. C., is first, with a death rate of 419.5."

As to the reliability of these figures, I am not in a position to say. They are given out under the sanction of U. S. officials. Had we State, county and municipal systems of vital statistics thoroughly reliable and accurate, the truth or falsity of such unfavorable statements could be tested.

Section 9 of the Act creating the State Board of Health, requires that every case of smallpox, Asiatic cholera, yellow fever, typhoid fever, scarlet fever, diphtheria, or membranous croup, occurring in the State of Georgia, shall be immediately reported by the attending physician, householder, head of the family, county or municipal authority, aware of the existence of such disease, to the local board of health, or the proper officer, within whose jurisdiction such person is found. Where local boards of health have not been organized, these reports shall be made to the Secretary of the State Board of Health at Atlanta, Ga.

Is it at all probable that none of these diseases have occurred in the State of Georgia during the years of 1907

and 1908? Should you examine the reports of the State Board of Health for the years of 1907 and 1908, no statement regarding the existence of the diseases above enumerated will be found, with the possible exception of a brief reference to smallpox. The intelligent presumption is that the diseases have existed, but no report has been made of such cases to the proper authorities.

Section 41 of the Act referred to, confers upon county authorities full power and authority to enact and maintain all such rules and regulations as may be deemed necessary for protecting the health of their respective counties, and for preventing the introduction, generation and spread of infectious and contagious diseases therein. How many counties in Georgia have complied with this law and utilized the power therein conferred? Perhaps some members of the Association may be able to enlighten us. My own country has no such organization, though proper officials have been urged to organize.

The labor of the doctor in making these reports, should be reduced, at least to the minimum, by having furnished to them proper blank forms, for births, deaths and the various diseases required to be reported, and to these might be added very properly, tuberculosis and typhoid fever, admittedly infectious diseases.

The paper could be extended largely by entering the field of popular enlightenment on the sources of infection and contagion of diseases, and the best methods of prevention of the same. This information and training must come from the medical profession; and here again the doctor will prove himself a philanthropist indeed. He is paid somewhat to make people well, when they get sick, but nothing receives when he teaches folks how to keep well, unless he gets his reward in the approbation of a good conscience.

The fearful ravages made on the human race by tuberculosis, make it a disease specially to be dreaded, and if there is a way to stop its march of death, and the train of misery and want often following in the wake, it is well worthy of

our most profound consideration. Its prevention through infection has been demonstrated so thoroughly, that it is now accepted as a fact.

In order to accomplish such a desirable effect, the medical profession will have to do the larger share in educating the public as to the source and media of infection, and the best methods of preventing same.

The following, from a paper at the International Congress on Tuberculosis read by Dr. Arthur Newsholme, medical health officer to the local government board of England, is so much in line of my contention, that I quote this paragraph:

"Social physiology and medicine are even more complex than the same sciences applied to the individual, and statistics must be used to decipher their mysteries. As they are required, our plain duty is to use them with the same care to avoid fallacy and the same pains to control our results as are expected in deductive experiment. The servant of public health is working on the lives of men, and should be laying the foundation of national prosperity and happiness. He belongs to an order of sanitary priests and belies his vocation and betrays his trust, if he does not use the material at his disposal fully and faithfully. He is his brother's keeper; and as in these matters knowledge means added life and happiness and usefulness to the communities whose welfare is his charge, he will reject no method of labor and spare no endeavor which offers the prospect of increased power over disease."

But the patience of the Association will not be taxed further by going into detail. Without summarizing, if the attention of the hard-worked and often ill-paid doctor can be directed somewhat more intently on the lines indicated, perhaps some small amount of good may be accomplished.

DISCUSSION.

Dr. C. M. CURTIS, College Park: I desire to thank Dr. Beauchamp for this paper. He calls our attention to a ques-

tion of great importance, that of keeping proper records, and also to the fact that physicians are every day becoming more and more teachers of how to keep well and when the time comes that this will be the only business of the physician we will be near the millennium, or at least the people will.

Dr. M. A. CLARK, Macon: The subject of this paper is certainly a matter of great interest to the profession, and it brings us back to the old subject that I have discussed so often in this body, that of organization, or reorganization as you please. We must get our component societies so organized that we can control these matters and until we can do that instead of having the officers controlled by politics we cannot hope for much improvement. We can aid in bringing this about by dignifying our profession. Let us so comport ourselves that the people will realize that while we are public servants we are not public slaves. Unfortunately, the State Board of Health has not the power to appoint the county health officers, but under the Act of 1901 the county commissioners can constitute themselves a board of health. While this is a poor loaf it is better than none at all and if we begin to work under that law we will accomplish something. By getting our county societies organized we will help greatly in this matter. We do need better statistics; we need cases reported; we need the people educated along this line and must make an effort towards that end. One of the best ways is through the schools. Every board of trustees should contain one physician. We must teach them that the physician is a valuable aid in the management of school affairs. The main point I want to stress is that we must continue to work together and talk organization and stick together for each other and for the people.

Dr. V. H. BASSETT, Savannah: The essayist has brought up a question of great interest, that of acquiring vital statistics. It is a matter of regret, and even stronger terms might be applied, that so few States have established a method for securing accurate statistics. Only about 15 of

the States have any systematic records. It has been shown that this matter is best handled by a central authority, through State or county officers. In some of the States it has been made a duty of the physician to report vital statistics. A failure may be punished and the making of proper reports is rewarded by the payment of fees. It costs a considerable amount but is of great value. The reports from these States may be accepted as being as accurate as they can be made based upon the reports turned in by physicians. One of the most valuable exhibits at the tuberculosis meeting was a flashlight arrangement showing that for every flash there was a death of one person from tuberculosis. It was estimated that over 200,000 deaths occur yearly from tuberculosis. Only about 80,000 deaths from this cause are reported, however, and the larger number quoted is only an estimate. The lack of accurate statistics makes it impossible to state the exact number.

Dr. J. C. BEAUCHAMP, Williamson: My remarks were intended particularly for our rural brethren, of whom I am one. Cities have reasonably fair health boards. I think the State of Pennsylvania has the best system of any State and they spend a large amount of money and have agents appointed by the Government.

THE HISTORY OF THE MODERN TREATMENT OF PENETRATING WOUNDS OF THE ABDOMEN.

BY THOS. R. WRIGHT, M.D.

Professor of Principles and Practice of Surgery and Clinical Surgery, Medical Department University of Georgia, at Augusta, Ga.

The title of my paper may seem a little queer, until one realizes that every advance in the progress of medicine has been brought about by circumstances with more or less interest attached to them. The story of Jenner and vaccination, the circumstances leading up to the discovery of anesthesia, "the last gift of mercy" as Oliver Wendell Holmes has termed it, are all of great interest to the profession. My object in presenting the paper is twofold: First, to give the author of this treatment the honor, credit and priority which are due him, but also to bring forward some of the valuable work which has been done by surgeons of the South in advancing the practice of surgery.

The incident about which my paper tells, the outcome of which marks one of the great advances in surgery, was enacted in the city of Augusta, and was the occasion of that study, forethought and practice which led up to the modern treatment of penetrating wonds of the abdomen. The incident to which I allude occurred on the 12th of April, 1852, and was the result of an election fight.

The report of the case is given you, just as recorded and published in the *Southern Medical and Surgical Journal*, of July for that year.

"Report of Case."

Mr. W. T., the subject of this case, is about 25 years of age, of good habits and not robust health. Being in a state of inebriation on the 12th of April last (1852), he got into an altercation with another man, and at 4 p. m., was stabbed in the

abdomen with a bowie knife an inch and a half in diameter. The abdominal walls presented but one wound, which was of the diameter of the knife just described, and situated about midway between the umbilicus and left anterior-superior spinus process of the ilium.

After receiving the wound, he walked three or four hundred yards to the office of Dr. E. Girardey, where I found him a few minutes later, lying upon a bed, with a mass about the size of a common fist protruding from the wound. His face was extremely pallid, his surface covered with cold sweat, his pulse small and frequent, and his stomach very irritable. He had eaten a hearty dinner, which he threw up, strongly impregnated with alcoholic liquor. Dr. Girardey and myself examined the protruding mass, which proved to be a portion of the small intestines with a little of the omentum, in a state of partial strangulation. At one point, the intestine was almost completely severed in two, at another, about half its circumference was cut open, and at a third, there existed another and smaller cut, about an inch long. These three intestinal wounds were transverse, and there were other scratches which did not transfix the coats.

After cleansing the parts, the intestinal wounds were neatly closed by Dr. G., with the glover's stitch. Feeling the importance, in such cases, of animal satures, which would be readily dissolved and absorbed, we used a violin string of the smallest size, previously softened with water. The protruding mass was then returned into the abdomen, the external wound stitched with good silk, and covered with an adhesive plaster, over which a compress was placed and secured with a roller bandage.

The patient was now carried home upon a litter and put to bed, with strict injunctions to keep the abdomen continually covered with a napkin dipped in cold water as often as necessary to keep it cool. These directions were effectually carried out by having two napkins in use, which were alternately applied to the body, and thrown into a bucket of cool water every five minutes durnig the first six days, and gradually at

longer intervals until the twelfth day, when the process was discontinued.

A full dose of opium was given in the evening, and ordered to be repeated, if he did not rest well. Cold water allowed, in to be repeated, if he did not rest well. Cold water allowed, in small quantities at a time.

April 13th. Passed a very uncomfortable night—took the opiate freely but was continually annoyed with nausea and painful efforts to vomit, and could not sleep; no febrile excitement; pulse less frequent. At 10 o'clock this morning the matters vomited began to assume a stercoraceous character, and continued so during the day. A little mint tea, essence of peppermint, or cold water alone, were occasionally taken, and the mouth rinsed with vinegar and water to correct the unpleasantness after vomiting.

14th. Resorted again to opiates during last night, with better effect—stomach still irritable, and ejected matters stercoraceous and very offensive. No febrile excitement; pulse better. Same treatment continued.

15th. Vomiting ceased this forenoon; slight febrile reaction; pulse better, skin warmer and of a better color. Drinks still used sparingly.

16th. Feels very comfortable; pulse and temperature natural; passes flatus from the rectum.

17th. Still improving; would like a little nourishment, but is not allowed to take it.

29th. On the 18th he was allowed chicken broth in small quantities at a time, and afterwards his diet was gradually though cautiously improved.

Opiates were occasionally given until the end of the first week. To-day an inclination being felt to evacuate the bowels, this was facilitated by an enema of tepid water, which was followed by a good, natural and fecal discharge, without pain; the first since the reception of the wound.

It is particularly worthy of remark that the abdomen did not at any time become tumefied; that it was at no time tender upon pressure, except in the immediate vicinity of the wound,

where it was a little sore for a few days. After the third day the pulse remained at 80 beats per minute.

On the 1st of May, he dressed himself and walked about the room. On the 3rd, diarrhoea supervened in consequence of exposure or of the atmospheric constitution, bowel affections being then very prevalent in the city. The diarrhoea changed to dysentery on the 5th, but was checked by an anoryne enema. Since then he has had no other difficulty, and is now (June 1st) attending to his business, apparently as well as ever. He is made to wear a truss bandage over the seat of the wound in order to prevent the tendency of hernia, which usually follows such cases.

In conclusion, I may be permitted to add that the singular exemption from general peritonitis, and the ultimate success of this case may very reasonably be attributed to the use of animal satures instead of silk, and the free application of cold water to the abdomen.

I can not let the opportunity pass without complimenting my young associate in this case for his skill and attention."

SOUTHERN MEDICAL AND SURGICAL JOURNAL, July, 1852.

In the following year, Professor L. A. Dugas, occupying the chair of surgery in the Medical College of Georgia, beagn teaching his classes in this Institution the results of his observation and study in the case just mentioned, and brought forth practically what is now given, as the treatment of penetrating wounds of the abdomen. The Doctor states that he did this, as will be presently shown by the reading of the paper, which was presented by him before the International Congress held in Philadelphia, Pa., in 1876. The facts are still further corroborated by a statement made to the writer by the late Dr. W. H. Doughty, of Augusta, a student in the college from 1853 to 1855, and also by the late Dr. DesSausure Ford, who graduates from the College in 1856.

In a letter from Dr. C. W. Wise, of Trenton, S. C., a graduate of 1861 of the same school, the statement is made that he too heard the lectures along this line as previously mentioned.

The first record that we have of the suggestions of Dr. Dugas being put into practice was during the Civil War by Dr. R. A. Kinloch of Charleston, S. C. it being upon a confederate soldier and done at the Roper Hospital in 1863. A letter from Dr. Manning Simmons of Charleston who was fortunate enough to witness the operation, corroborates the statement as well as does the report upon the "Surgery of South Carolina," by Dr. L. C. Stephens, of Blackville, S. C.

This so far as my study goes, is the first instance in which the operation was done for a penetrating gunshot wound of the abdomen, and as will be noted was done by a Southern surgeon.

Dr. J. McFadden Gaston, of South Carolina, later of Atlanta, Ga., united the ends of severed intestines in 1859 for stab wound. It will be noted that he was seven years behind Dr. Dugas. Dr. Dugas continued his lectures along this line until December, 1875, when there occurred a duel on the famous grounds of Sand Bar Ferry near Augusta, in which one of the parties received a pistol shot wound, the ball entering upon the right side just in front of and one inch below the anterior superior spine of the ilium, traversing the abdomen in a straight line, stopping under the skin in the same position on the left side. It was my privilege, although a student at the time, to be with the late Dr. Ford, who was the surgeon for the injured party, and who afterwards requested me to hold an autopsy on the unfortunate man. Dr. Dugas with a number of other physicians were present, when the abdomen was opened, showing the intestines perforated in a number of places and the cavity filled with blood and fecal matter, it seemed to bring afresh to the mind of the Doctor, the great importance of pressing still further what he had already been teaching as the proper practice in this dreadful class of cases.

On the following morning at his lecture hour, after expressing himself in no uncertain terms upon the horror of dueling, he gave to the class as the substance of his lecture the remarkable paper, which will soon be presented to you, and which he afterwards read before the International Medical

Congress held in Philadelphia in 1876. The tragedy, with its fatal outcome, the autopsy and the lecture which I heard, caused me to ask the Doctor why he had not put in practice in the case mentioned, the treatment which he had so ably advocated. His reply was: "I am too old, my suggestions must be carried out by you younger men." How well this has been done, not only by the surgeons of Georgia and the South, but by the entire world we of the present day well know, and no one can tell the number of valuable lives that have been saved by the carrying out of this treatment.

Although Dr. Dugas' case was a stab rather than a gunshot wound of the abdomen, the principles are the same and were so advocated by him at the time. The credit for this advance in surgery has been variously given to Gross of Philadelphia, Marion Sims of New York, Kinloch of Charleston, and Hunter McGuire of Richmond.

Let us look up the dates and see how they compare: Gross in his surgery, edition of 1872, while giving very much the same treatment, fails to mention the author. Holmes Surgery as edited by Packard mentions the treatment and gives Dr. Dugas the credit. Sims in 1882, after President Garfield was shot cables from Paris: "Open the abdomen, find the bullet, remove it and drain."

This according to Dr. John A. Wyeth of New York, was the first public announcement of his intention to do this in his practice. Dr. Hunter McGuire, in his article before the Medical Society of Virginia in 1872, while advocating the same treatment at that time, in his second paper before the American Medical Association in 1881 gave Dr. Dugas the credit, which he so justly deserved. (letters Dr. Stuart McGuire.)

In a letter some thirteen years ago, that distinguished surgeon, Dr. W. W. Keen of Philadelphia, writes: "The paper of Dr. Dugas on penetrating wounds of the abdomen is published in the proceedings of the Congress. I do not, after this length of time recall the way in which his views were received, as there is no discussion apparently printed with it. The paper

I have read over again and it is certainly in advance of its time and very much in line with our present treatment."

It may be of interest to state that in 1904, the gentlemen upon whom this operation was done, Mr. Thompson, learning of my interest in his case, called upon me, narrating the story as already given and showing me the scar with its ventral hernia and also expressing his gratitude and enthusiasm for the gentleman, who was instrumental in saving his life.

(Copy from the transactions of the International Medical Congress held in Philadelphia in 1876.)

REMARKS UPON PENETRATING WOUNDS OF THE ABDOMEN, WITH THE SUGGESTION OF A CHANGE OF PRACTICE IN SUCH CASES.

BY L. A. DUGAS, M.D., LL.D.,

Professor of Surgery in the Medical College of Georgia.

Penetrating wounds of the abdomen are full of interest to the surgeon, not only because of their frequency, but also because of their extreme fatality. The marked susceptibility of the lining membrane of the abdominal cavity to morbid action, and especially to the absorption of deleterious agents, together with the importance of the organs contained, will account satisfactorily for the gravity of these wounds.

But the danger of these injuries varies according to their character and to the organ implicated. It is, therefore, not a matter of indifference whether the injury be a puncture, an incision, or a gunshot wound; for, while punctured and incised wounds are more liable to induce hemorrhage, they heal more readily by first intention; whereas gunshot wounds are less apt to be attended with serious loss of blood, but will almost invariably be followed by suppuration. In penetrating wounds of the abdomen our first concern the nis with regard to hemorrhage, which itself will depend upon whether a large vessel be opened or a parenchymatous organ be in-

jured: for punctured and incised wounds of large vessels, and of the liver, spleen, and kidneys, are usually attended with rapidly exhausting loss of blood. If the patient escape this first danger, the question presents itself as to what we should apprehend next; and the determination of this question is of the utmost importance to the patient, as his life may depend upon it.

Upon this point there exists among writen authorities the most striking uniformity in the belief that peritonitis is the condition most to be dreaded when primary hemorrhage has not carried off the patient, and that the extraordinary fatality of these wounds is the necessary consequence of this inflammatory action, whether induced by the mechanical injury, or by the contact of atmospheric air, of effused blood, or of fecal extravasation. And yet, when we come to examine into facts, we find that the great majority of deaths occur so early after the injury as to render such an explanation exceedingly improbable and unsatisfactory.

Death, unless from hemorrhage, usually takes place within from twenty-four to thirty-six, or at most forty-eight hours after the injury; a rapidity entnrely too great to be accounted for by any process of inflammation, properly so called. No true inflammation ever runs its course to a fatal termination in so short a time. Moreover, the peritoneum is not an organ of such vital importance as to render its inflammation necessarily fatal; and whe ndeath does attend this inflammation from other than traumatic causes, dissolution rarely takes place in less than a week.

Again, it may be doubted that the peritneum is as susceptible to inflammation as is generally supposed. Indeed, with the light thrown upon this subject by the multiplied operations for ovarian disease, is it not evident that the danger of a traumatic injury, per se, of the peritoneum has been enormously exaggerated? Is it not also tru, on the other hand, that the mortality resulting from these operations has gradually lessened with the additional care taken by the surgeon to pre-

vent the retention of blood or other septicaemic materials in contact with the peritoneum?

With these preliminary considerations we now feel prepared to advocate the doctrine that the frightful mortality of penetrating wounds of the abdomen, and the rapidity with which the fatal result is brought about, point directly and immediately to septicaemia or blood-poisoning, as the only condition adequate to the production of such effects; and that the blood-poisoning is the almost necessary consequence of the plan of treatment recommended by standard authorities and carried out in daily practice.

If the intestines protrude and are found to be wounded, we are advised to cleans, stitch, and return them unto the cavity; otherwise the case is to be trusted to nature, and perhaps treated by antiphlogistics with a view to prevent or to subdue peritoneal inflammation. In the meantime the blood necessarily effused, whether much or little, is left in contact with the peritoneum, rapidly undergoes putreffactive decomposition, and is as promptly absorbed. Magendie long since demonstrated the wonderful celerity with which agents were carried into the circulation through the serous membranes. But if the system may be contaminated by the retention of blood alone in contact with the peritoneum, what should we not expect from the addition of feacal extravasation. Assuredly not inflammation, but most rapid septicaemic poisoning. In view of the rapidity with which toxic agents reach the circulation through the peritoneum and other serous membranes, we may safely infer that the fefacal poisoning begins very soon after the extravasation, and that it must have much to do with the rapid prostration so uniformly observed in such cases, and usually attributed to nervous shock.

The lawful fatality of penetrating wounds of the abdomen revealed by statistical observations would seem to indicate the necessity for a change of practice, and I have accordingly been teaching for a number of years to the classes of the Medical College of Georgia the propriety of looking upon septicaemia

as the paramount danger of such wounds, and of taking such steps as would be best calculatel to avert this poisoning.

The recent occurrence of several fatal cases in my neighborhood prompts me now to a more formal appeal to the profession for a reconsideration of the principles by which we have been governed in such cases, and to suggest that in all instances of penetrating wounds of the abdomen, in which there may be any suspicion of the existence of effusion of blood or feces into the peritoneal cavity, the surgeon should proceed immediately as follows:

(1) Induce anaesthesia.

(2) Lay open the abdomen along the linea alba, freely enough to make a thorough inspection of the parts contained.

(3) Ligate all bleeding vessels as far as possible.

(4) Examine carefully the whole length of the alimentary canal, in order to detect any wounds, and to stitch them: If the intestinal wound be ragged, it should be trimmed down to a straight edge.

(5) In gunshot wounds reduce the channels of entrance as well as of exit through the abdominal walls to the form of incised wounds, so that these may be closed and left to adhere by first intention. In some cases it may be found necessary for this purpose to remove the uneven track by a double elliptic incision.

(6 Cleanse the wounds and peritoneum of all extraneous materials and close the abdominal walls with suitable sutures and adhesive plasters.

(7) Finally, control the peristaltic action with opium, and administer such nourishment as will leave least fecal residium, as milk, egg, etc.

As supplementary to these suggestions it may not be out of place to add that for anaesthesia I would prefer ether, as being les enervating and safer than chloroform; and that, for stitching the intestines, animal ligatures of catgut or violin strings, wet with an antiseptic solution, should be preferred.

These principles have been most successfully carried out by the writer and others in cases in which the wounded intestines

have protruded; and yet we have allowed other cases to die simply because the abdominal wound has not been sufficiently large to permit the bowels to some into view.

If the practice now suggested be considered harsh and hazarduous, I would ask what can be worse than the authorized plan, which makes death the rule and recovery the rarest exception? Is it not time that we should discard as groundless the fears heretofore entertained with regard to opening the abdominal cavity? No change of practice in the class of wounds now under consideration can make the chance of recovery less than they are now; and I feel confident that by adopting the plan proposed, we should so alter the results as to make *Recovery* the rule and death the exception.

THE TRAFFIC IN HUMAN LIFE IN GEORGIA.

Mr. President and Gentlemen of the Medical Association of Georgia:

"And a vision appeared to Paul in the night. There stood a man of Macedonia, and he prayed him saying, Come over into Macedonia and help us." I appear before you today, not as a vision, but as a representative of the Muscogee County Medical Society; but I come with the cry of the vision that appeared to Paul. "Come over into Macedonia and help us" to stop forever the traffic in human life in Georgia. We need your help, we need the help of every intelligent man and woman in the State. It may be that some of you have the same trouble in your part of the State; if you have, no argument is necessary to obtain your support; if you have not, then a word or two of explanation may be necessary.

CASE I. A married man, graduate of public schools, in an unguarded moment, like thousands of other men, strayed off from home one night. Result: a case of syphilis. Afraid to tell his wife; afraid to tell his family physician; he tells his druggist friend. Now, the druggist instead of sending

him to a physician gave him to understand that there was no use of him consulting a doctor. "I know as much about the disease as any of the doctors; I treat more of it than half the doctors in town put together; you have certainly come to the right place." Then in a lowered tone of voice: "It will not cost you near as much as it would had you gone to a doctor. I make no charge except for the medicine, and by coming to me you will save from $50.00 to $100.00. I am a friend to all boys who get into trouble."

The young man took the medicine as directed; he improved; the external signs of the disease disappeared. Then he could no longer make his sick claim justify his conduct toward his wife; so he went to see the druggist and with her resumed his marital relations. In nine or ten months his wife gave birth to a syphilitic baby, which died about one week after birth from an umbilical hemorrhage.

About six weeks later the wife began to have symptoms which her husband attributed to "bad blood." Now, if there is any one thing the prescribing druggist can do, is to fix up something for this malady. This is his specialty. In fact, while you common doctors have to examine the case, questions, he does not even have to see the case; all he wants to know is it "bad blood;" and if it is, he has a remedy from 50 cents to $2.00 a bottle that is guaranteed to cure all cases. The young man's diagnosis of "bad blood" was probably correct in this case, but his wife did not improve; she grew rapidly worse. A doctor was called in; a diagnosis of syphilis was easily made. The patient on account of improper treatment was nearly dead. The doctor called in two others for consultation, but the usual specific remedies were of no avail: it was too late. Death relieved her sufferings in about two weeks.

Case II.—Married woman about thirty-five years old, healthy, stout and robust, decided she did not care to be bothered with any more children. I had been her physician for about ten years. She came to my office one day and related the fact that her menses were six or eight weeks over-

due. I refused, of course, to interfere, and warned her if she did take anything to bring herself "around" not to send for me; that in all probability it would cause her death, and that I never liked to be invited to attend a pre-arranged funeral. She went out never to return. She stopped in the drug store on her way home and after telling the druggist her trouble about taking "cold" he sold her a box of medicine for $1.00 with instructions how to take it. I do not know whether she followed the directions or not, nor the contents of the box, but as I passed her house on my way home that night she called to me and said, "You are not my friend any more; the druggist is; he gave me something that will bring me 'around' all right." Two days later a brother physician who was called in to attend the case, asked me some questions in regard to the best means of checking uterine hemorrhage. The next day another doctor was called in consultation, and two days later they turned the case over to the undertaker. On my daily rounds I frequently pass by the former homes of these two women, and the wail of their orphan children seems to cry to Heaven for revenge.

CASE III.—A man applied to a druggist for treatment for a swelling in the left inguinal region. The druggist examined him and told him he was ruptured. The druggist fitted him on a truss, for which he charged him $2.00. On account of the pain produced by the truss he returned and made a complaint to the druggist, who assured him that the truss was all he needed, and that it required several days to become accustomed to it; that the pain was to be expected, and that within a short time he would be all right again. The man put up with the torture for four or five weeks. Then, on account of fever and weakness, he was no longer able to go to the drug store, so he called in a physician. The physician found only a bubo, which, when opened, discharged over one pint of pus. We could cite you cases like this all day, but these are all that are necessary to prove to you that we need your help.

The question naturally arises, how can these things be in

Georgia, when we have such strict laws governing the practice of medicine?

Georgia, for a long time, was a dumping ground for all the quacks of Christendom, but the act of the legislature establishing medical examining boards partly freed us from this pest. The quack, as a rule, had at least an elementary medical training, but charged exorbitant prices for his assumed skill. On account of his failure to make good his promises, he did not tarry in one place long, but soon "passed on like ships in the night;" but his successor, the prescribing druggist and the medicine vender, have come to stay until the strong arm of the law forces them to discontinue their traffic in human ignorance and in human life.

It may be that a great many of you are unacquainted with the medicine vender. If the proportion of him to population that obtains in Columbus, Ga., holds good throughout the State, there must be at least three thousand of him in Georgia. He makes and sells medicine; he is not a druggist, because he has never studied pharmacy, chemistry or any related subject. He does not know the medical name of a single drug, nor the dose nor the effect. For his purpose it is not necessary to know anything except to make and sell medicine. Some of him run on an independent schedule; they dig roots and herbs which they combine into a few simple decoctions, and then they are ready for business. Whatever he lacks in number or variety of remedies is made up for by the marvelous virtues which they possess. They are specific for anything from a sore toe to typhoid fever.

Another variety of him gets a prescription or formula from some old newspaper or medical book and goes to a wholesale drug store, orders and mixes the constituent drugs himself. Then with a few big labels bearing the legend something like "Mexican Blood & Liver Syrup" pasted on the bottles, he is ready for business. The male portion of this variety stands around the market place, and calls to all passersby in a low confidential tone that here is the only place this wonderful medicine may be obtained. The fe-

male portion of him with the same remedy bearing a label which guarantees the contents of the bottle to be the only absolutely reliable specific for female "troubles," takes to the by-ways, highways and hedges, and peddles her wares from house to house. You may have other varieties of him in other portions of the State.

Section 1478, Vol. 1, Code of Georgia, 1895, defines the practice of medicine as follows: "For the purpose of this chapter the words 'Practice of Medicine' shall mean to suggest, to recommend, prescribe or direct for the use of any person, any drug, medicine, appliance, apparatus, or other agencies, whether material or not material, for the cure, or relief, or palliation of any ailment or disease of mind or body or for the cure or relief of any wound or fracture, or other bodily injury or deformity, after having received, or with the intent of receiving therefor, either directly or indirectly any bonus, gift or compensation." In order to test this law, to find what it means, we had three true bills returned by the grand jury of Muscogee County, two of them against druggists, one against a "root and herb" doctor. There was no question of facts in either case; the defendant admitted to "fixing up" (the word prescribing seemed to frighten them a little) a bottle of medicine for the patient in question after having listened to his statement concerning his disease, and they also admitted the fact that they charged the regular retail price for the medicine, the price that they would have charged had it been on a prescription, but they did not charge anything for prescribing. In each case, we failed to convict, because the courts held that the 50 to 500 per cent. above the flat cost, the profit in the transaction, inasmuch as it was the regular retail profit, was not a bonus, gift or compensation. If this is true, our laws regulating the practice of medicine in Georgia should either be amended or repealed. Unless this law is amended so as to remove all doubts as to its meaning, we may as well hang out a sign calling attention of all the world to the fact that in the great State of Georgia everybody, no matter how

ignorant, can make and sell medicines without passing examinations or paying professional tax, or other hindrances whatever, so long as they charge only for the medicine and there is no law for fixing the price of that. We had an eminent jurist to look into the laws on this subjcet, and he could find no case of conviction and appeal to the Supreme Court. If there has ever been any convictions under this law, they were not appealed to the Supreme Court and no record of them has been made except in the places where they occurred. But the courts of this and all States uniformly hold, when a druggist furnishes medicine which he himself prescribes, he cannot collect the account by law, because he does not have the right under the law to prescribe.

Now, in order to remedy this defect in the law, to make it so plain that a wayfaring man though a fool he be, may not err therein, we come to you, gentlemen of the Medical Association of Georgia, to help us. And by helping us you will not only be helping yourselves but every citizen in the State of Georgia. By adding one line to Section 1478 which we have just read, there will no longer be any doubt as to what it means. After the last word of the section, namely, "Compensation," if we add the words "for drugs or other agency suggested or recommended or for making the suggestion or recommendation," there will no longer be any doubt about the meaning of the law.

It is always easier to amend than it is to repeal and reenact. So that is why we think it best to have this section amended.

Now, do not console yourself with the thought that inasmuch as this law is in the interest of humanity and especially in the interest of the most ignorant classes as a rule, that it will be an easy matter to get it passed by the legislature; for such is not the case. When this bill is introduced you will find that one of the most powerful and unscrupulous trusts and combinations on the face of the earth, the patent and proprietary medicine trust, together with a few wholesale drug houses, will have men and money in unlim-

ited quantities before the legislature to defeat it. Every conscientious retail druggist in the State will favor the passage, because it cuts off this trade advantage of his unscrupulous brother. We have received letters of commendation from several druggists throughout the State since we commenced the fight on the drug traffic, but we cannot expect much assistance from them because the medicine trust with threats of blacklisting, and boycotting, will keep most of them silent. There is nothing in this amendment to keep the druggist from selling any one any remedy or drug that he may call for, provided the sale is not prohibited by the anti-narcotic drug bill.

It does not interfere with the legitimate drug trade. It wrongs no one; robs no one. It curbs the greed of a few unscrupulous men.

> When cunning greed with ignorance meets,
> Honor wings her flight from this vale of care;
> And error rises in his might,
> Debasing all who the profits share.

If medicine is to remain the altruistic profession that it has been heretofore, it is time that this Association was up and doing something besides proclaiming its noble purposes. Admitted that it is only the most ignorant portion of our citizens who patronize the medicine vender and prescribing druggist, is the more reason why we should see that they are protected. If indeed, we are our brother's keeper, it is time for us to rise as one man and put a stop to this traffic in this life. Let us see that our committees before the legislature next June have the proper encouragement, sympathy and support. Let every doctor in the State appeal in person or by letter to the representative from his county. This is the oldest Association of any profession in the State. The druggists have had their laws so perfected that a doctor can not even fill a prescription for a brother doctor unless he has passed the State Board of Pharmacy. The dentists and lawyers have had all laws passed which they deem necessary for the public good. The old wrangle of different schools of medicine has been eliminated by the

act creating three different examining boards. So we are in a position to appeal to all creeds for the good of all.

The death rate of Georgia is at least 1000 more per annum on account of this traffic in human life than it should be. Perhaps two thousand young men are strictured annually by the use of strong injections for gonorrhœa, and how many innocent brides are doomed to a lifetime of suffering because some prescribing druggist assures the bridegroom that when the discharge ceases the danger of infection is passed. "Is there no balm in Gilead? Is there no physician there? Then why is not the health of the daughter of my people recovered?" How shall we answer this question? Shall we say that the members of the once independent profession of medicine in Georgia have become an adjunct to that great Colossus, the Drug Trust, and are now walking around under its huge legs seeking out for themselves dishonorable graves? Or "from over the hills of Habersham and down from the valleys of Hall" to the marshes of Glynn, from the valley of the Chattahoochee to the valley of Savannah, and from the plains of Thomas to the mountain peaks of Rabun and Towns shall there come a mighty chorus of affirmation. We await your answer, assuring you that inaction on your part will, and justly, too, send you on to oblivion; but an affirmation to do the right without fear or favor, will herald your praises on down the broad vista of time into "States unborn and accents yet unknown."

T. Neal Kitchens.

Discussion.

Dr. Frank Bright, Dublin: The essayist has sounded a note of warning that we would do well to heed. The habit of counter prescribing is so universal in the small towns and the result so often bad that it behooves us as custodians of public health to take cognizance of the matter.

While the average druggist is a gentleman and does not countenance the practice, yet the drug clerk is often a specialist in all kinds of troubles and on a moment's notice can

mix a specific. I know some drug clerks who have an office practice equal to most any man in this hall. I do not mean as lucrative, for this is one reason the druggist should not permit it. He prepares some little inexpensive and generally injurious mixture which nets the firm far less than the physician's prescription would, besides depriving the doctor of his legitimate work. We should see that a suitable amendment to the medical act is passed. Such a measure could not hurt the druggist and would throw a protection between the people and the pernicious habit. Let the druggist and physician stand closer together, for they are each in many ways dependent on the other.

Dr. MARTIN COOLEY, Savannah: This matter of counter prescribing by druggists is an evil existing in every city in this State. I would suggest that the Doctor have this subject in pamphlet form sent to the secretaries of each county society with the request that they get up some concerted action in reference to the matter.

Dr. J. G. DEAN, Dawson: I just want to confirm everything said by Dr. Williams. It seems to me that there is nothing that so concerns the medical profession to-day as this matter of counter prescribing by druggists. I was very recently called to see a case hurriedly and found the patient cyanized as the result of having gone to an incompetent druggist, who had prescribed a headache powder which contained an excessive dose of one of the coal tar products.

The prescription used by the druggist was supposed by the patient to have been one of my own, but the druggist had presumed to fill it without knowing the quantity of the ingredients and used more than three times the amount to the dose which had been in my prescription he was supposed to copy.

Dr. M. M. HALLUM, Carrollton: I am Chairman of the Board of Censors in our county society; we have a gentleman supposed to come from Tennessee who claimed to have graduated under the name of Hancock; he came there and was married under the name of Lewis. The certificate was from

Sewanee, Tenn. We had the names of ten people who had been treated by him but the matter went before the grand jury and no bill was returned. He agreed to come to our regular meeting and show his diploma. He had no certificate from the State Board.

Dr. M. A. Clark, Macon: We must not let our zeal get the better of our judgment in this matter. There are some prescribing druggists, but there are also still some gentlemen in the profession of pharmacy. You will all agree that our profession is not entirely free from fraud. And you will agree with me that the people will continue to self-medicate in spite of everything. The remedy is by education and not by legislation. We must educate the people. We must get our remedial legislation by working with the druggists and not by fighting them. We have a great many reliable druggists in Macon and I think there is very little trouble of that kind here. The mistake we make with reference to legislation is that we discuss these matters and agree to do certain things but go home and forget about them. If we get the amendment the Doctor wants the druggists will still prescribe and the people will still self-medicate. We are in a measure the guardians of the poeple and yet we are not absolutely so; we must allow free will.

Dr. St. J. B. Graham, Ellijay: With reference to Dr. Clark's remarks I would like to say that the people have been undergoing education for thousands of years and are not educated yet. A few years ago it was thought proper to sell cocaine indiscriminately. Proper legislation has stopped that and there is no reason why it should not stop the sale of other medicines without a proper prescription.

Dr. J. Lawton Hiers, Savannah: We have in Savannah a number of druggists and I am sure there are a great many who do not practice counter prescribing, though some few may do a little practice of that sort on the quiet, but the point I arose to emphasize is the importance of trying to protect the public against spectacle vendors. Frequently we have people coming to us showing us glasses which have

been sold to them by spectacle vendors. A few years ago a poor woman came to see me and showed me a pair of very strong convex glasses that she was wearing and on examination I found that she required concave glasses. This practice is constantly going on. A short time ago a man came to see me and said that "Prof." Somebody had sold him the spectacles he was wearing for twelve dollars and charged him ten or fifteen dollars for medicine to absorb his incipient cataract. I simply want to suggest that Dr. Kitchens include this subject in his amendment.

Dr. T. N. KITCHENS, Columbus (closing discussion): I would just like to state in regard to the druggists that so far as I have been able to ascertain about nine-tenths of them are good, honest men; yet one out of every ten tries to prescribe for everybody simply for the money that is in it. There is always one man of this kind in every profession and it is against him that we must legislate.

WHOOPING-COUGH.

BY SAMUEL A. VISANSKA, M. D.

In presenting this subject to you for discussion let me state at the beginning that I am sure the gravity of pertussis is scarcely appreciated by the general public or physician, and there is more criminal neglect in connection with whooping-cough than with any other disease. Therefore, I feel it a duty to present this paper to-day. No doubt it has been painful to you as it has been to me to witness the intense sufferings of a large number of children during a paroxysm so characteristic of this disease. Yet many grandmothers delight in telling how their children, at the beginning of a paroxysm, would run to a chair, place their elbows on it, give a few whoops, turn pale in the face, eyes would bulge, then would follow violent vomiting or perhaps a hemorrhage from the nose and then the little one, soon recovering, would run and play until the next time. The public, unfortunately, believes that every child must have whooping-cough, measles and other kindred diseases, and that being the case it is thought the sooner such diseases are contracted the better. I have often heard mothers remark in speaking of a family of children, "Might as well let them all take it at one time!" Gentlemen, is it right to allow such ignorant ideas to remain without at least trying to inform the public that children are NOT doomed by any laws of Providence or otherwise to either measles, whooping-cough or other kindred contagious diseases? We must first of all insist that children suffering from infectious diseases shall not be allowed to play with other children or to come in contact with them in any way whatever; these laws must be absolute and every city or town should have a board of health to make such laws and see that they are rigorously enforced. Perhaps some of you are not aware that the death rate from

whooping-cough stands third on the list, coming as it does next to gastro-intestinal and pulmonary diseases of infancy. Yet what progress has been made or what steps have been taken to find a specific cause or a specific cure for this malady? It is because of the gravity of this subject and for these reasons that I invite your attention to this subject and encourage a discussion of it in order that we may be able to glean new ideas and possibly stimulate each other to further activity and wider research as to its treatment and cure in the future.

While I have stated that little has been done to isolate this special bacillus, yet a number of bacteriologists have already done good work in this line and should be encouraged to yet further efforts. Afanassieff in 1887 isolated a short bacillus which he named the Bacillus Convulsivæ Pertussis. The other investigators prominently identified with the influenza-like organism of pertussis are Spengler, Jackman and Krause abroad and David J. Davis and Martha Wollstein on this side of the water. They all now agree in finding a minute hemophilus bacillus indistinguishable in morphology and cultural peculiarities from B. influenza of Pfeiffer. Davis has found the influenza-like bacillus in fifty-six out of sixty-one cases of pertussis studied in all stages. Wollstein found it in twenty-nine out of thirty cases examined. Bordet and Gengor found a small bacillus different from the influenza-like bacillus. Arnheim also isolated the same bacillus, from all of which it will be seen that as yet there is nothing definite as to the true bacillus.

PATHOLOGY.

There is no lesion that can be considered characteristic of whooping-cough; it is only when complications arise that we get a true pathologic condition. In the beginning there is a catarrh of the naso-pharynx and this may be the only lesion coincident with the development of the characteristic cough. In advancing cases this naso-pharyngeal catarrh be-

comes generalized by extension to the lachrymal ducts, the conjunctivæ, the eustachian tube and the middle ear; to the glottis, trachea, large and small bronchi and the air vessels. The more decided pulmonary lesions, emphysema, pulmonary collapse, pulmonary congestion and edema and broncho-pneumonia are advanced pathologic conditions accompanying the later stages or more intense form of the disease.

Etiology.

As I have already stated that, while the true bacillus has not been isolated, still we know, and I believe all will agree, that the disease is contagious and seems to have a tendency to occur in epidemics every two years. One attack usually protects a child, yet exceptions to this rule have been reported. These epidemics are more frequent in the fall and spring. As to the age of the child the disease is not frequent after ten years, the majority of cases being under three years and frequently before the first year, at which latter period it is very fatal. The true nature of the disease is not yet fully settled; many writers claim it to be a simple bronchitis due to cold associated with certain nervous habits or mimicry. It has also been stated that the disease is a lesion of either the pneumogastric, phrenic, sympathetic or recurrent laryngeal nerves. If this ground is valid it is simply a neurosis. Eustace Smith says it is caused by the pressure of the enlarged tracheal and bronchial glands upon the terminal filaments of the pneumogastric nerve. I believe whooping-cough to be an infectious catarrhal process which affects the mucous membrane controlled by the superior laryngeal nerve and the value in many cases of purely local treatment indicates that the abode of the germs is in this region when the poisonous products of the growth are absorbed.

Symptomatology.

As to the symptomatology you are all too familiar with these to make it necessary for me to go into details here.

It is necessary for us to try to recognize the disease as early as possible so as to place the little patient not only under the best possible hygienic and medical treatment but also to protect the other children in the house or neighborhood from contact with the disease. This early diagnosis is important because I believe whooping-cough to be contagious throughout its entire course from the very beginning of the catarrhal stage until the cough with expectoration ceases entirely.

COMPLICATIONS.

Hemorrhages from the mouth, nose, conjunctivæ, ears and in a few cases intro-cranial are observed in many cases. Broncho-pneumonia, emphysema, gastro-enteritis, marasmus, vomiting, often distressing convulsions, more frequent in infancy, tuberculosis, paralysis, aphasia as well as disturbance of the sight and hearing are some of the other complications arising from an apparently "simple" case of whooping-cough. While hernia, umbilical and inguinal, also eneuresis, are not uncommon.

TREATMENT.

It will be difficult in the time allotted to me to cover all the small details of treatment and, as I have already stated, I trust the day is not far distant when we will know the specific cause and will have found a specific cure for this disease. But until that time arrives much can be done to lower the enormous death rate. In the first place I firmly believe that all cases of whooping-cough should be isolated; this should apply even to suspicious cases especially if there are children near under three years of age. Then, we should have hospitals to receive and treat whooping-cough just as is done for scarlet fever and diphtheria. In this connection I will read you what the editor of "Archives of Pediatrics" has to say on this subject in the edition for October, 1908: "Whooping-cough hospitals a need of every large city. Every physician of large experience with babies and young

children must have been confronted many times both in hospital and private practice with cases of pertussis that needed the constant nursing and medical supervision of a good hospital. In infants pertussis alone is sufficiently formidable but when to it are added any one of the complications the case becomes indeed serious. Statistics from New York City for the year 1905 show that the deaths from whooping-cough in children under five years old amounted to 397. This is a greater number than died at the same ages during the same year from scarlet fever, diphtheria and malaria combined. Broncho-pneumonia, colitis and cerebral hemorrhage comprised a group of very dangerous secondary maladies to be borne by a baby already depleted by the vomiting, inanition, and muscular strain of the primary disease. No hospital in New York City will knowingly receive cases of whooping-cough. This is a crying shame. But New York is not unique among American cities in this respect. So that with all our boasted advance we are far behind France and Germany."

HYGIENE.

A rational fresh air treatment should always be carried out, for an appreciable reduction in the number and severity of the paroxysms results when the patient is outdoors and the number of these attacks at night will be no greater than during the day if the room be properly ventilated, with a sustained temperature of 60 to 70 degrees F. In very cold and inclement weather and in febrile cases the alternate use of two rooms, with thorough airing of each after use, is recommended. The clothing should correspond to the season of the year.

DIET.

Attention to the diet is very important, as vomiting is often a persistent and at times an alarming condition. Nutritious, easily digested food should be given often and in

small quantities, the best time to administer it being just following a paroxysm. For the vomiting Dr. W. T. Kilmer of New York has advocated the use of an abdominal belt made of linen with a strap of elastic webbing under each arm and fastened by lacing up the back. Besides the relief of the vomiting he claims that the number of paroxysms are reduced and complications rendered less frequent by this belt. An objection has been raised to the belt on the ground of its causing hernia. It is doubtful, however, if this is true. In connection with this I will state that last year I was called on to treat not less than six cases of umbilical hernia within a week, each case being the result of pertussis. Some of the cases were already wearing different kinds of apparatus, but I used the Z. O. adhesive strips and all made good recoveries. The thought then occurred to me that this very troublesome complication might be prevented by the application of the strips (just as in hernia) during the convulsive stage; my idea being that it were better to wear these strips a few weeks than a few months.

MEDICINAL TREATMENT.

As in every other disease where we have no specific remedy nearly every preparation in the pharmacopœa has been tried and yet only a very few have been used with any success in this disease. We must remember that we are dealing with a self-limited disease, such as scarlet fever, typhoid fever, etc., therefore, much can be done to make the little patient comfortable, reduce the number of paroxysms and possibly prevent complications. It is a bad idea to begin medication to any extent until you see the need of it, just as it is a bad idea to stimulate the pulse in pneumonia and kindred diseases before the heart needs assistance.

For the first or catarrhal stage you might treat as for an ordinary bronchial catarrh, but it is for the second or paroxysmal stage that the doctor is usually called to treat the little patient and even then he is seldom summoned until the disease is at its height. Naturally, he is then taxed to

the extent of his skill to bring any relief to the small sufferer, who is having from 20 to 80 paroxysms in the twenty-four hours, principally at night. It is right here that we all differ in treatment and I might mention fifty preparations that have been used.

Local Treatment.

Local treatment will give you good results in many cases, a spray of peroxide of hydrogen, glycerine and water or a few drops internally to infants. Medicated steam often brings relief, especially where the mucus is tight and ropy. A croup kettle can be used to convey the steam or a coffee pot will suffice. The medication should consist of carbolic acid, oil eucalyptus and turpentine.

Local applications of mustard and camphorated oil seem to make the child more comfortable. To cut down the number of the paroxysms I find the drugs most useful are antipyrine, sodium bromide, belladonna, quinine, bromoform and recently I have used passiflora incarnata (may pop). Until I began to use the passiflora my preference was for a combination of antipyrine and sodium bromide, but my results from the use of the passiflora have been so satisfactory that I have discarded everything else in favor of it. I have used this preparation in thirty-two cases and the results were astonishing; the severe cases being converted into mild ones and complications of any kind were averted. The preparation used was Daniel's Concentrated Passiflora Incarnata. It is non-toxic, does not constipate, is palatable and leaves your little patient with no bad after effect. To a child one year old begin with twenty to thirty drops every two hours and increase the dose until the paroxysms are under control. I used this preparation at my free dispensary for children in twenty-three cases and in my private practice for nine cases. I hope and expect to make a more extended trial and a fuller detailed report. I would be glad if you would give this preparation a thorough trial, and let me

know your results. The preparation is manufactured by John B. Daniel, Atlanta, Ga.

In the stage of decline of whooping-cough tonics such as Cod Liver Oil, I. Q. & S. and a change to the seashore is advisable.

Complications arising from this disease of course demand such treatment as is applicable to them individually.

AUTO-INTOXICATION.

BY THOMAS J. MCARTHUR, M. D., CORDELE.

Mr. President and Gentlemen:

In discussing the subject of auto-intoxication before this body of medical men, I feel that I must apologize for my inability to do so important a subject justice. In the limited time allowed me I shall not be able to go into the detail of every phase of the subject, but will simply offer some established theories together with a few conclusions derived from my own observation and experience.

The medical profession is becoming more and more interested in this subject and has begun to consider it a potent factor in a great many diseased conditions.

We are living in an age when the medical profession has changed her attitude of observation. We no longer content ourselves with the study of symptoms, anatomical lesions and pathology, but have at last come to study the origin of diseases. We want to know, not only the symptoms, anatomical lesions and pathological conditions present, but we want to know the causes which produce them. We have found that man contains within himself the causes of many diseases. Intestinal putrefaction and toxins formed in the body are potent factors in many diseases which have not been understood until recently. A study of this condition and the part it plays in disease and health is of great interest and demands very serious consideration upon the part of the medical profession.

It has been proven that man is born free from microbes, but during parturition and soon after birth the skin and mucus membrane become infected; and as early as four hours after birth bacteria have been found in the intestinal contents. According to an authority an adult passes daily in

his feces from thirty to fifty billions bacteria. Although many of the bowel micro-organisms in health are apparently harmless, they can yet become extremely virulent when their surroundings are altered as in disease.

The stools very probably eliminate most of the poisons contained in the alimentary canal, but on account of the slow passage of the intestinal contents much of them are absorbed by the intestinal mucus membrane. These microbes multiply very rapidly when the food is of bad quality, indigestible or unsuited to age, and the result is an increase in intestinal fermentation, catarrh or inflammation of the digestive tube. Sometimes one takes too much of one kind of food. For instance, when one takes an excess of the carbohydrates more glucose is absorbed than the cells can utilize and some of it passes into the urine. Another person uses too much nitrogenous food which is absorbed causing an excess of uric acid, which may pass into the urine or accumulate in various parts of the body, causing gout, headache and malaise. Roger indicates that these nutrient phenomena produced under the influence of external causes, once established, may be transmitted by heredity and that the disorder is often more marked in the offspring than in the parents. A gouty father has a son subject to migraine, another to diabetis, a third to asthma and yet another to renal lithiasis.

In one form of auto-intoxication poisons are formed in the interior of the cells of the body as the result of metabolism, and all these together with part of those formed in the intestinal canal from decomposition finally reach the blood through the lymphatics. The skin, lungs and kidneys eliminate these poisons, but of all the organs of elimination the kidney is the most important. It has been demonstrated that urine is toxic, and when the urine ceases to be secreted the organism is poisoned. The substances of disassimilation have not only become useless but they are even harmful, for the cell abandons them unfit for nutrition, and not being eliminated the system has become poisoned by its own products. If the poison is eliminated as fast as it

is produced health is maintained, but if the process of elimination becomes retarded from fatigue, exposure, excesses or any diseased condition, and the supply of it continue, intoxication is produced by accumulation of this toxic material, which is manifested by languor, muscular pain, headache and many nervous reflexes.

The general practician prescribes almost daily for headache, muscular pain and some derangement of digestion which is the result of auto-intoxication; and it is this condition which furnishes many patients for the neurologist, some for the oculist and pediatrist as well as for the stomach specialist. Self-poisoning resulting from modern culinary methods and mode of eating is probably the most fruitful source of a doctor's patients.

We meet with auto-intoxication frequently as a complication in entero-colitis of children, typhoid fever, malarial fever, the puerperal state as well as many other diseases. In the lying-in period we sometimes find it a very troublesome condition, frequently lasting for weeks, even months, occasionally causing sciatica and a disturbance of the functions of nearly all the organs of the body. In entero-colitis it is our greatest foe, as the poisoning from the micro-organisms has a very depressing effect on these little unfortunates. As a complication in the above named diseases, auto-intoxication produces symptoms which are frequently very difficult to handle, and the physician that understands that these symptoms are not produced by an inflammatory condition, but by toxemia, is most successful with these cases.

One other form of auto-intoxication is that of over-excitement from undue haste and the abnormal conditions of modern life. Verworm arrived at the conclusion that in consequence of over-exertion there is induced a toxemia to which excess of carbon dioxide in the tissue largely contributes.

Oliver calls attention to the mixed form of infection that occurs during pregnancy, and which is believed to be partly renal, hepatic, intestinal and the consequences of metab-

olism. Many physicians regard it as a neurosis; others claim that it is a reflex due to abnormal development of the uterus, while a great many believe it to be a symptom of auto-intoxication. The most efficient treatment is restriction of diet and the elimination of waste product through the kidneys, bowels and skin. Those of us who have treated many cases of puerperal eclampsia have observed that the attacks frequently follow free indulgence in nitrogenous food, such as pork, oysters and the like. Hence, we have learned to restrict the diet and look after elimination as a prophylaxis in pregnant women, especially if there are any suspicious symptoms.

Not only is auto-intoxication prevented by the activity of the emunctories, but it has also been shown how the body itself may be protected from disease by the formation in the system of certain anti-toxins.

Another natural defense of the body is the destruction of bacteria by leucocytes. By this destruction of microbes health is maintained and disease averted. It is otherwise with the human body when it is run down and the power of resistance is lessened by fatigue, exposure or any excesses. Then the microbes multiply and disease may develop. Hence, the importance of keeping the power of resistance up to the highest point.

With this knowledge in regard to the pathogeny of self-poisoning, it is plainly our duty, in the first place, to prevent the poison being formed. When it is formed we must endeavor to prevent its penetration into the system by absorption. Though there are many causes of auto-intoxication, it is from the alimentary tract that the poisons are chiefly absorbed: then clearly this is the part of the body that calls for special attention and treatment. Prevention takes precedence of cure. Oliver says that "nitrogenous food is much more likely to induce auto-intoxication than are carbohydrates. The freer use of milk and the return to a simpler diet are called for. Constipation must be overcome by diet and aperients. When these fail the administra-

tion of intestinal antiseptics becomes a necessity and medicines of this class, if they are to do any good, must possess little solubility and be therefore slowly absorbed so that they can traverse the length of the intestines."

All physicians are not agreed as regards the use of intestinal antiseptics, some contending that intestinal putrefaction is not influenced by these drugs. In my experience, however, I have repeatedly seen the most wonderful results obtained from the administration of intestinal antiseptics; and it is a fact that many physicians do believe it is practicable to obtain intestinal antisepsis, and it is significant that they are chiefly to be found among those who have given it a thorough trial. In the Georgia Practician for July, 1906, Dr. John Forrest of Charleston, S. C., admitting that perfect antisepsis is unattainable, even on the outside of the body, argues that nevertheless "such an approximation is attainable as will change the whole complexion of a case and bring about most satisfactory results from very unpromising beginnings." "Is not perfect health," he asks, "a condition of normal antisepsis? And what higher degree of atisepsis do we require to satisfy us? And yet such a condition is compatible with the presence of a countless multitude of micro-organisms, some of which we know may be pathogenic." As indicated by Dr. Hare, in the Therapeutic Gazette of April 15th, 1907, commenting on this, I cannot understand why the opponents of intestinal antisepsis should think it necessary to kill or injure the micro-organisms in order to produce an effective stage of intestinal antisepsis. In a state of perfect health the micro-organisms are still there in full force, but the physiological forces of the body are capable of taking care of them and prevent them from doing any harm to their host. When the power of resistance becomes lessened, then the micro-organisms get in their work as toxic agents; but till then the soil is not suitable. There are two things necessary to poisoning; not only the poison but the person apt to be poisoned. As the same writer says, "When we find a person whose resistance

is so reduced that the micro-organisms are able to get in their work, it is really so very inconceivable that even minute quantities of certain antiseptics, such as may be safely ingested, should be sufficient to alter the dynamic states of the environment in which the micro-organisms subsist, enough to render them temporarily impotent for harm. Meantime the human organism is gradually recovering its own powers of defense, sufficient to enable it to keep a conquered people, so to speak, vastly outnumbering their conqueror, in control, as history has shown repeatedly to be the case with regard to bodies politic."

Hemmeter has laid down four lines of treatment for intestinal auto-intoxication, viz.: prophylactic, dietetic, hydriotic (lavage) and medicinal. This includes the avoidance of all food that is capable of undergoing fermentation and putrefaction. Lavage of the colon and anything that will promote the normal peristalsis of the intestines are of service. Medicinal treatment includes those remedies which oppose intestinal putrefaction and facilitate elimination through all the emunctories as well as those which prevent the absorption of the poisons. This can be realized in certain cases; some toxic substances are naturally precipitated in the intestines, and others may be fixed by charcoal, which retains them physically. If the poison has been absorbed we must endeavor to destroy it. It is a proven fact that the liver has the power to arrest poisons; it withdraws them from the intestines and eliminates or destroys them. We should therefore stimulate its action by certain therapeutic treatment. That part of the poisons which cannot be eliminated should be prevented from absorption by the administration of such drugs as will either precipitate them or render them less virulent; remembering that it is not necessary to kill the germ in order to prevent them doing harm to their host, but to simply alter the dynamic states of their environment sufficiently to render them temporarily impotent for harm, until the human organism recovers its own

powers of defense, sufficient to resist the invasion of this army of poisons.

Oliver says that "the antiseptic action of medicaments does not proceed in a parallel manner with their toxic power. We can not, therefore, say that what will kill the microbe will necessarily kill the patient." Some medicines, such as mercury and carbolic acid, are much more destructive to vegetable cells than to animal cells. We must, therefore, use such antiseptic substances as are very hurtful to vegetable cells, and yet innocent so far as the elementary tissues of the animal are concerned. Some of the antiseptics most frequently used are bismuth, iodine, calomel, salol, carbolic acid, charcoal and naphtholin. A portion of some of these agents is absorbed but not in a quantity to hurt, if given in discretion. If all these should fail we must try to counteract the effect of the poison and keep up the strength of the patient, so that he may have time to eliminate the poison.

As stated above, auto-intoxication is frequently a very troublesome condition in continued fevers. Especially is this true in the southern part of our State where the presence of malaria interferes more with the process of digestion by keeping up an engorgement of the portal vessels, resulting in intestinal putrefaction and perverted metabolism. The cases denominated by some as "slow fever" are not benefited by treatment except such as rest in bed, restriction of diet, looking after elimination, intestinal antiseptics and those measures which preserve the vital forces. Drastic purgatives, reckless feeding and those things which depress are extremely dangerous. It is simply a case of preserving the vital forces and aiding nature to resist and throw off this army of toxins until its own power of resistance becomes able to take care of itself.

The question arises as to whether or not some of these fevers may not be due to toxemia. Dr. H. F. Harris of Atlanta, in a paper read before the Pathological Society in that city, recently, suggested that fevers might have that origin. Dr. Michael Hoke of Atlanta has apparently shown

that the so-called chronic rheumatisms are closely associated with a process of intestinal putrefaction which may be accompanied by fever. And neurologists have charged it with producing neurasthenia and many very troublesome conditions met by them. If all this be true is it not probable that it is responsible for some of our continued fevers? We have been in the habit of calling all these fevers either malaria or typhoid; many insist on that yet, but as diagnosticians we are not justified in calling it either until it is proven, and when we fail to prove it either way it may be auto-intoxication.

I trust that the investigations already begun will continue, unabated, until the matter is cleared up and the diagnosis made possible in all cases.

And now, gentlemen, having consumed the time allotted me, I bring my remarks to a close; conscious of the fact that I have not exhausted the subject. Much more might be said, but I trust that enough has been presented to emphasize the importance of the subject from a diagnostic standpoint.

DISCUSSION.

Dr. GEO. M. NILES, Atlanta: I very much appreciate personally this excellent and thoughtful paper of Dr. McArthur. It is a subject necessarily of great interest to every practitioner, whether in general practice, or any of the special branches; because, no matter what line of work he does, he is bound to meet a greater or lesser number of cases with auto-intoxication or toxemia as the main feature to be reckoned with.

As to the symptoms and treatment: for instance, the latest investigations as to the action of calomel have proved that it does not increase the amount of bile, but that the good effects we get from calomel come from its action as an intestinal antiseptic; that all this long train of symptoms grouped under the term "biliousness" is really a toxemia; and when we relieve the condition so quickly by the admin-

istration of calomel, it is because of the antiseptic action of that drug.

The test for indican is simple, and it strikes me should be used just as often as the usual tests for albumen or sugar. A one-half per cent. solution of permanganate of potash, muriatic acid and chloroform are all that are needed, and one can tell quickly whether the patient is taking more proteids or carbohydrates than he is burning up. Researches have shown that a man can generally burn up daily four ounces of flesh proteid clean, but if you put more in, though it will be burned up to a certain extent, it will leave a certain amount of "clinkers," and when you get too much you clog up the grate, as it were. Toxemia is almost always a *proteid* toxemia and not a carbohydrate one. I wish to add to the excellent list of intestinal antiseptics mentioned two others —resorcin and icthyol. Two drops of icthyol mixed up with a little marshmallow, and given two and a half hours after meals, will produce good effects in the various forms of intestinal toxemia.

A PLEA FOR THE EARLY AND THOROUGH REMOVAL OF TONSILS AND ADENOIDS IN CHILDREN.

BY DUNBAR ROY, M. D., ATLANTA.

1. Anatomical Position and Structure.
2. Physiologic Function.
3. Pathologic Function.
4. Remote Effects (1) By Pathologic Involvement, (2) By Mechanical Obstruction.
5. Rational Treatment.

My only excuse for bringing a time-worn subject like this before our Medical Association is the fact that its importance to the specialist and general practitioner is alike, and also that I wish to put myself on record as favoring an early operation for tonsils and adenoids and this too only under a general anesthetic.

In the last few years the deleterious effect of enlarged or diseased tonsils and adenoids upon the general constitution of the individual, has been universally recognized, and its importance is increasing with every year of our medical advancement. It is impossible for me in the limited time at my disposal, to go thoroughly into every detail of this subject, but I shall try as far as possible to present some important facts as a practical contribution to the subject in question.

The anatomical position and relationship of the faucial tonsils and adenoid tissue in the naso-pharynx, is no doubt too familiar to need discussion, although I shall speak later on this point when discussing the obstructive influence of these parts to the proper ventilation of the nose and ears. The lymphoid ring in the throat now has a definite meaning to nearly every physician, embracing as it does the circle of lymphoid tissue known as adenoid, faucial and lingual ton-

sils. All of this ring of tissue is histologically the same, being what is known as lymphoid. On account of the prominent position and ease of examination the faucial tonsils have for a long time received more attention than did the adenoid tissue in the naso-pharynx and the lymphoid tissue at the base of the tongue. This furthermore was justifiable because the faucial tonsils do produce more systemic disorders than possibly do the remainder of the lymphoid ring and for this reason has received more attention from physiologists and workers in patnologic anatomy.

The anatomical position of the faucial tonsils between the folds of the palato-glossus and palato-pharyngeal muscles, is no doubt familiar to all, but there is an anatomical formation above each faucial tonsil which in the last few years has received much attention on account of its pathologic importance, in being probably the starting point for various infections in and about the tonsils, especially of peritonsillar abscesses.

Killian was one of the first men to call attention to this anatomical formation from the examination of 105 anatomical preparations and 100 living persons. He found that there exists immediately below the semi-lunar fold of mucous membrane which covers the upper part of the tonsil in front, a depression or chinck. This is the opening into a relatively large cavity lying in that area of the tonsil which is concealed by the soft palate. Examination with a probe shows that this space has a mean depth of 1 cm. This same space was called by His, the anatomist, the supra tonsillar fossa and is almost universally called by that name to-day. This fossa may be prolonged downward in front of the tonsil or it may stretch outward behind the palato-glossus muscle almost to the lower jaw. It is not a crypt of the tonsil but a space above this organ. Enough has been written to show that it has a distinct anatomical entity and possesses clinical significance. It may become the seat of suppuration which may drain in a very imperfect manner and in this way give rise to continuous throat irritation.

Patterson has found pyogenic organisms in great abundance in this space and believes that it is the point where the majority of tonsillar infections arise. My own observations correspond with this statement. In fact Killian has given up the ordinary incision through the soft palate in cases of peritonsillar abscess and opens them through the supratonsillar fossa by means of a probe introduced into the abscess by this route.

The question as to the physiology and function of the faucial tonsils has not as yet been settled, although a great deal of experimental work has been done in this direction. It is just for this very reason that so many diverse opinions exist as to the proper treatment of this lymphatic tissue both in the naso-pharynx but more especially the faucial tonsils.

The appearance of tonsils with their numerous crypts or lacunæ is no doubt familiar to every physician who even occasionally examines a throat, but their function in the light of the present day knowledge, is still veiled in some obscurity. It is for this reason that I shall speak for a moment on the present theories in regard to these organs. In 1907, E. Barth published in the Deutsch. Med. Woch. a very exhaustive article upon this subject and I shall take the liberty of quoting from the same as the most recent exhaustive contribution to the subject.

Histologically the tonsils consist of adenoid tissue, the same structure as exists in the naso-pharynx, and it must be concluded that their function is similar to the lymph glands. It is for this reason that they show a close resemblance to the Peyers' patches and solitary glands in the intestine.

The tonsils being placed in a superficial position at the level of the mucous membrane at the beginning of the air and food passages, they have been shown to have a constant emigration of leucocytes on to the mucous membrane. The presence, however, of openings in the epithlium through which the lymphocytes might migrate, have not been en-

tirely substantiated. One peculiarity about the tonsils is the presence of fissures and folds, crypts and lacunæ.

The theory that the tonsils have some power to aid the digestion and absorption of carbohydrates, has not yet been established. Some clinical investigations by Lichtwitz and Sabrazes have shown an improvement in the condition of the blood after removal of hypertrophied tonsils.

The theory of the protective action of the tonsils is opposed by the fact that they are especially liable to inflammation in consequence of infection and are often the source of a general infection. Barth says that inflammation of the tonsils is only in rare cases the result of an infection of the surface of the tonsil but arise more frequently by a secondary infection which reaches them through the lymph channels. He illustrates this by referring to a tonsilitis which sometimes follows an operation in the nasal cavities even after the most thorough asepsis and this I have myself noted. The infection here arises not from the surface of the tonsil but from the wound in the nose through the lymph channels. It seems therefore that the tonsils have the power of excreting foreign substances which are brought to it by the lymph stream, besides having some secreting powers of their own. There is a great diversity of opinion among investigators as to the physiological and pathological function of the tonsil. At variance to some of the views above expressed, is the summary given by Hodenpyl at the close of his most exhaustive article published a few years ago on the physiological function of the tonsil. He says that his investigations lead him to conclude:

1. The tonsils are lymphoid structures closely resembling Peyers' patches of the small intestine.

2. None of the theories thus far advanced to explain the functions of the tonsils, are conclusive.

3. The tonsils produce no physiologic secretion.

4. The tonsils are not absorbing organs, contrary to the later views as expressed by Barth.

5. Tubercular tonsilitis is an uncommon condition.

6. There is no evidence to show that pulmonary tuberculosis ever results from absorption of tubercle bacilli from the mouth through the tonsils.

7. Rarefaction of the epithelium of the tonsils affords a ready explanation of the way in which the contagion of diphtheria may gain entrance to the general circulation in this disease.

Goodale of Boston and Kayser of Breslau both have experimented and shown that the absorptive power of the tonsils is very limited.

Although a study of these physiologic experiments shows many conflicting statements as to the function of the tonsils, in fact leaving it an open question as to whether or not they have any special function, the fact is nevertheless true that clinical observation has shown many relationships existing between diseases of the tonsils and other pathologic conditions if the human body. Many clinical observers have reported authentic cases where varied diseased conditions of the body had their origin through the portals of the tonsils and adenoid tissue in the naso-pharynx. Tonsils which give rise to these various systemic conditions, or at least apparently so, are seemingly just as active whether normal or abnormal in their appearance. Certainly the large flabby tonsil with numerous large secreting lacunæ, or even the small friable and degenerated tonsil, would be looked upon more as the starting point of various systemic affections than those of a more healthful appearance.

The importance of the faucial tonsils and adenoid tissue in the naso-pharynx as the gate of infection for chronic tubercular disease, has excited marked attention during the last few years. While the results of the various investigators in the field differ as to the frequency of various forms of systemic tubercular trouble originating through this source, the possibility of such an occurrence must certainly be considered. Clinical facts can not always be substantiated by laboratory investigations and for this reason we must consider both sides of the question.

During the last few years, laryngologists especially have noted the relationship between enlarged glands of the neck and a diseased faucial tonsil, and the brilliant results obtained in the complete disappearance of these glandular enlargements after the thorough removal of the tonsils, can not but impress upon all the relationship of cause and effect.

The question as to what are enlarged and diseased tonsils will probably never be settled as long as there remains so many different ideas on this subject among physicians. Lennox Browne says that all tonsils which project beyond the faucial pillars and many of those which do not, are foreign bodies in the throat and should be removed. This probably is extreme and yet in my own mind I think Browne is nearly correct.

Logan Turner says that the presence of enlarged cervical glands should make the removal of hypertrophied tonsils imperative. G. B. Wood has done considerable experimental work along this line and he concludes that the tubercle bacilli not only produce a tuberculous condition of the tonsil itself but that they pass through the structure into the lymphatics. According to this observer, "the lymphatic drainage of the faucial tonsils runs directly to the upper deep cervical glands, which glands, by a rich system of anastimosis, are connected by afferents and efferents with practically all the lymph glands of the neck and head. The tonsillar lymph gland is generally situated just below the posterior belly of the digastric muscle where it crosses the anterior border of the sterno-cleido mastoid. Topographically this spot is located just behind and below the angle of the jaw." According to this observer, nearly all tubercular adenitis of the neck have their origin through the tonsils.

Strassman, Dmochowski, Kruckmann, and others, have demonstrated the existence of tubercle in the faucial tonsils and their observations have been confirmed.

Hugh Walsham has examined the faucial tonsils removed post mortem from 34 cases of tuberculosis and found them

tubercular in 20. In his examination of tonsils removed from living persons, his results were negative. Goure examined 201 cases both microscopically and by inoculation and he could also find no trace of tubercle. On the other hand a more positive result has been found by other observers. Pillet found evidences of tubercle in 7, 5% in naso-pharyngeal adenoids. Lemoyez has published two cases where the adenoid tissue removed was almost entirely tubercular. Dieulafoy, after inoculating guinea pigs with portions of adenoid tissue from 35 patients, obtained tubercle in 20% and histological examination by the same observer revealed evidence of tubercle in 5, 7%. Brindel obtained positive evidence in 12, 5%, and Gottstein in 12%. Positive evidence of a tubercular nature has also been obtained by McBride and Turner of Edinburgh, Milligan of Manchester and Brieger of Germany.

An interesting observation was that of Riethi, who found tubercle bacilli in six out of one hundred hypertrophied tonsils removed from persons showing no signs of tuberculosis. He believes that all hypertrophied tonsils should be removed as early as possible. Goodale of Boston, who has done more experimental work on the faucial tonsils and naso-pharyngeal adenoids than perhaps any other one man in this country, besides being an exceedingly capable and conservative laryngologist, sums up what would probably be accepted by most laryngologists as the present status of this uncertain question. He does not believe that a cervical adenitis of tuberculous nature can be removed by the removal of the tonsil, because the tubercle bacilli have already penetrated into the lymph glands. What should be done under these circumstances is to prevent further penetration of more bacilli into the lymph glands by extirpation of the tonsils and adenoids. In many instances there is enlargement of the glands of a non-tuberculous nature in which removal of the tonsils brings a relief to the glands.

Briefly summarized, it may be stated that primary tuberculosis of the tonsils and adenoid tissue in the naso-pharynx

is rare but as portals for the entrance of the tubercle bacilli cases pro and con having been reported which would lead us to believe that the tonsils play no unimportant role in general systemic tuberculosis.

During the last few years much has been written in reference to the relationship between rheumatism and the faucial tonsils. Such a relationship is almost universally recognized, a fact which shows that the internist and the laryngologist must work together. Such accurate clinical observers as Osler, Thayer, Solis Cohen recognize this relationship and many cases have been reported where the removal of the diseased and degenerate tonsils have absolutely cured rheumatic conditions of the severest character.

Ingalls says that he is compelled to recognize the relationship existing between the two diseases, since in examining the records of 100 cases of tonsilitis without selection, he found "that 45% had had, were having or had immediately following, an attack of rheumatism." Melville Hardie thus summarizes the present status as to our knowledge of the relationship between rheumatism and tonsillar affections, and from my own knowledge of the literature on this subject, I think his deductions are quite correct.

1. It is undoubted that a certain number of cases of acute rheumatism are preceded by angina, the proportion varying from 30 to 80 per cent.

2. Both rheumatism and angina have many etiologic points in common, season of the year, cold, wet, fatigue, depression, vitiated air, etc.

3. The connection of angina and rheumatism, though undoubted in a number of cases, is not yet clearly explained.

4. The tonsil may be the port of entry of the rheumatic virus, and this even though the naked eye appearance of the throat gives no indication of its being affected.

5. The particular affection of the throat which is associated with rheumatism has not yet been established. Apparently it is not peritonsillar abscess.

6. Peritonsillar inflammation does not seem to be arrested

by the administration of anti-rheumatic remedies. Many cases of parenchymatous and lacunar tonsilitis on the other hand are considerably benefited by the administration of salicine or the salicylate of soda. That this action proves the rheumatic nature of the disease, cannot yet be accepted.

7. The question requires research in two directions: one is the differentiation of the various forms of angina, and ascertaining which one is associated with rheumatism; the other in further research to discover the true nature of rheumatism.

Besides tuberculosis and rheumatism, which seem to bear some decided relationship to the tonsillar structure, other conditions have been reported which also show some similarity. For instance, numerous cases have been reported where a diseased condition of the tonsil has either produced a septic infection or has been the gateway for the entrance of such septic organisms.

Jessen of Hamburg has reported three very interesting cases where the general history of the cases and bacteriological examination showed almost with certainty that the general infection entered the body through the tonsils. W. Lubinski records four cases where there was an acute inflammation of the thyroid gland following an acute tonsilitis and has been able to find only one other case similar to these and this one was by Inervain.

H. Weber has reported two cases where an angina tonsillaris was followed by appendicitis. The author's explanation of this association is, that the irritant reaches the appendix from the throat through the digestive tract and he further observes that the micro-organisms which especially excite appendicitis, viz., the influenza bacillus, and the streptococci are frequently the cause of angina. This is certainly an interesting observation and I trust that physicians and surgeons will bear in mind the possibility of such a relationship and that all such authentic cases may be reported. I have myself known of several cases where the removal of

an appendix has been followed by a cessation in attacks of tonsilitis which previously had been quite frequent.

As a resume of these important points, I can do no better than to give the conclusions of Uhlman published in 1901. These are:

1. That the normal tonsil has a physiologic function, probably protective to the organism. (This is true if we knew what was the normal tonsil, but unfortunately this is far from being decided.)

2. That being in itself diseased, the physiologic function of the tonsil is impaired, and that instead of being protective, it is the nidus for the growth and distribution of pathogenic organisms and their poisonous products in the system.

3. That many grave and fatal general infections have their origin in the tonsils.

4. That if the exanthemata, particular scarlatina, are of bacterial origin the tonsil acts in part as a port of entry.

5. That acute articular rheumatism, and the diseases often associated with it, endocarditis and chorea, in a great majority of cases are due to the action of attenuated bacteria, their toxins or both entering the system through a diseased tonsil.

6. That in those rare cases of typhoid fever in which no intestinal lesions can be demonstrated, the similarity of the tonsillar tissue and Peyer's patches suggests the tonsil as the portal of entry of the Eberth bacillus.

7. That scrofulosis is often associated with diseased tonsillar tissue and that the tubercle bacillus often enters the system via the tonsils.

8. That the tonsil is too little examined at autopsy and much light might be shed on fevers of uncertain origin by its bacteriologic and histologic examination.

It is unnecessary to speak of the relationship existing between the lymphoid tissue in the throat and the acute infectious diseases such as measles, scarlet fever and diphtheria. The first symptoms of these diseases as manifested

by some form of amygdalitis, is familiar to all, and needs no further comment. The fact is certainly obvious to all that enlarged and diseased tonsils and adenoids add much to the gravity of any of these diseases and frequently prolong a more speedly convalescence.

I wish now to speak but a few moments in reference to the obstructive influence of this lymphoid tissue upon the respiratory and aural development of the individual.

The development of any chest, the expansion of any lung, which is one of its physiological functions and thus indirectly the oxygenation of the blood for the purification of the whole body, is absolutely dependent upon free and unobstructive respiration through the nose and mouth. A child with enlarged tonsils and even more so with a naso-pharynx filled with adenoids, has but a feeble constitution to withstand the numerous ailments which seem to be the heritage of the young. The two conditions, adenoids in the naso-pharynx and enlarged tonsils, are usually associated together although I have frequently seen a large amount of adenoid vegetations without a corresponding enlargement of the faucial tonsils. Both conditions are obstructive to free respiration and in many cases enlarged tonsils are just as serious offenders as a bunch of adenoids, for they extend high up beneath the palatal folds and can materially narrow and diminish the size of the naso-pharynx.

This leads me now to the consideration of the second point and that is the indirect influence upon the ears of this obstruction to free nasal respiration. The eustachian tube acts as a chimney, and in order for it to be freely ventilated and likewise the middle ear, there must be an unobstructive passage of air continuously over its mouth which terminates in the naso-pharynx. Breathing through the mouth is absolutely useless in exerting any influence on the middle ear, because the air cannot possibly reach the opening of the tube. This lack of ventilation in the middle ear, produced by the presence of adenoid vegetations and enlarged tonsils, is most usually the starting point of the so-

called dry catarrhal deafness which in after years is so difficult to remedy, and which probably could have been arrested in the early years of life by more radical treatment. * * * * * Both of these conditions, but especially adenoids, are the hotbeds for the production of that catarrhal state manifested in the very young by frequent earaches during the winter and a constant nasal discharge. Abscesses of the middle ear with the possibility of the extension of this pathological process to the mastoid, jugular vein and cranial cavity, with all its serious consequences, can in many cases be traced to an infection from the naso-pharynx, engendered by the presence of adenoids. This, fellow practitioners, is no idle fancy but is confirmed by the experience of all clinical observers.

Having shown you some, not all, of the injurious effects upon the general system by the presence of adenoids and enlarged and degenerated faucial tonsils, I wish to close with a plea for an early and radical operation upon these structures. The results of such an operation when properly done are simply marvelous upon the general constitution of the child and in the majority of cases will make such an individual much more able to contend with the physical vicissitudes of life.

When should such an operation be performed? Preferably between the ages of three and six but even earlier should the tonsils and adenoids be found giving trouble.

Should all faucial tonsils be removed? My own opinion is that if the adenoid require removal, that the tonsils should be removed at the same time, especially if there has been a previous tonsilitis or the tonsils are enlargd enough to project beyond the faucial pillars. I believe with Lennox Browne that tonsils are foreign bodies in the throat and as as such are better out than in. I know there will be strong adverse criticism to such a position, but it has been reached only after years of experience and the observing of conditions later in life which could have been remedied had the management of the same been along these lines earlier in life.

Why wait to operate later in life or perhaps not at all and allow abscesses and discharging ears to fasten themselves upon the individual with all their direful consequences? Why allow peritonsillar abscesses and enlarged cervical glands to undermine the constitutional integrity of the individual? Why allow those constant coughs every winter and those recurring earaches in the very young? As Dr. Goodale says, the removal of tonsils will not always remove the enlarged cervical glands after they have become infected through the tonsils, but you can frequently prevent such a condition by the early and thorough removal of adenoid vegetations and faucial tonsils before the infection has taken place. If adenoids are present in a child afflicted with discharging ears, you cannot heal this condition until the adenoids and tonsils are removed or if they do heal, under local treatment, there will likely be a return of the discharge with each succeeding cold.

In regard to the operation. The day has passed when a thorough tonsil and adenoid operation should be undertaken in the office, because it not only does the patient an injustice but likewise the physician. The operation should be considered a major one, to be performed in a hospital where the necessary technique may be used and where the surgeon is able to meet any emergency should such occur. It has always been my endeavor to impress upon the laity and the profession also, that this is not a simple operation if done thoroughly but requires the greatest skill and manipulative ability. I have frequently heard other laryngologists of prominence and ability say that they considered the dissection and removal of the faucial tonsils one of the most difficult operations which they were called upon to perform.

If the operation is done early, when the child is young, the one great danger, that of hemorrhage, either primary or secondary, is obviated, for almost without an exception those cases of severe or even fatal hemorrhage which have been reported as following the removal of the tonsils, have oc-

curred in adult patients. We must except in this statement those cases of a hemorrhagic diathesis.

When examining throats daily and listening to the histories of long continued and frequent suffering in this region from old neglected tonsils and adenoids, I am more than ever convinced that they should have been removed thoroughly when a child and thus save years of annoyance if not actual suffering.

Only a few words in reference to the operation itself. I prefer that this be done in a hospital where the nurses and assistants know your methods and where proper illumination can be had for the field of work. This of course can be done at home and in cases of adenoids alone, is quite as satisfactory. I always desire the patient to be placed thoroughly under the anesthetic and preferably ether, as the records show that it is the safer. You must have good illumination so as to see exactly what you are doing. A mouth gag is used and I prefer one of the Murdock variety. I prefer the patient on his or her back, although some of the best operators prefer the patient in the upright position. The assistant stands on the left side, ready with sponges and the tongue depressor. The tonsils are now dissected from the anterior and posterior pillars, pulled out of their bed with the tonsil forceps, a snare or tonsillitome passed over the latter and the tonsil in this way thoroughly removed. If any remnants of the tonsil should be left on account of its being soft and friable, these can be removed by means of the Hartman's tonsillar punch. The child is now turned, so that the face hangs over the left side of the table and all bleeding allowed to cease, which it usually does in a very few moments, after which the adenoids are then removed. I prefer the Brandegee forceps followed by the curette and finally with my finger wrapped with sterile gauze. After all bleeding has ceased, the child is put to bed on its abdomen with its head turned to one side so as to allow the escape of blood and mucus. In twenty-four hours, if there is no fever, the child may be taken home. Liquid diet is ordered

for thirty-six hours. One other remark in regard to this operation and that is to say that results will always be better when the same is performed during the warm weather. In fact I think that only operations of urgency should be performed on the nose and throat in cold weather if we desire to obtain the best results.

In conclusion, allow me to express myself again, by saying that this operation is the most beneficial of all in the domain of pediatrics, and if performed early and thoroughly will make the majority of children strong and healthy for all future life.

Grand Opera House.

ADENOIDS AND THEIR TREATMENT.

BY J. LAWTON HIERS, M. D., SAVANNAH.

In the presentation of this subject I shall not attempt to dwell upon the minute pathology, nor the history, of naso-pharyngeal hypertrophy, but to deal chiefly with the most prominent clinical aspects and the proper treatment.

In 1655 the pharyngeal tonsil was discovered by Schneider, but not until 1868 when Luschka and W. Meyer called the attention of the profession to them, was the clinical importance of adenoids recognized. Much has been said and written about adenoids but only in recent years have many of the most astute thinkers among general practitioners been attracted by the ravages of this insidious disease, which rightly should be associated with childhood, although occasionally the condition is found in adults. Solis Cohen has reported one case at the age of seventy years. It is in the hope, therefore, of elucidating a few convincing facts, that an absolutely free nasal respiration is essential to the perfect physical and mental development of the child. The enlargement of the pharyngeal tonsil, which is most frequently causd by one or repeated attacks of rhino-pharyngitis, has such an important bearing upon the health and well-being of the individual, that its early recognition and proper treatment constitutes one of the most important chapters in rhino-laryngology.

The origin of earache, deafness, suppurating otitis media, and mastoiditis, in the child, almost invariably can be traced to the presence of adenoids. A contraction of the chest, deformity of the upper jaw with such a distortion of the dental arch that many dentists refuse to treat until after the removal of the adenoid growth. Interference with the speech, snoring and mouth breathing, with that characteristic tired facial expression of the child, are all prominent symptoms

of the disease. Fortunately, with proper treatment, the results are so satisfactory that in most cases we may expect an absolute cure, provided the damage has not been allowed to go beyond the point of repair.

The Supreme Architect of the Universe, in designing the nose, constructed it so as to warm, moisten and filter the air before it reaches the lungs. Adenoids produce a hypertrophy of the turbinate bodies, which condition interferes with free nasal respiration.

A child, therefore, in this unphysiological state is much more susceptible to diphtheria, croup, laryngitis, bronchitis and even pneumonia than one in normal health. Asthma and incontinence of urine, are occasionally reflexly symptomatic of adenoids, and frequently the evil may entirely be relieved by the removal of the growth. It has been estimated that adenoids are present in 90 per cent. of children suffering with enlarged tonsils. The growth, however, is very often found without any hypertrophy of the faucial tonsils.

Adenoids are infrequently found in a warm climate of even temperature, and in dry and mountainous countries, but are more prevalent in one that is cold, damp and variable, where children are very susceptible to frequent attacks of acute rhinitis.

It is a well known fact that some surgeons attempt the removal of the growth with an adenoid curette, without an anesthetic, while an assistant forcibly holds the child in an upright position on his knee. I have even known some men to attempt their removal with the finger nail. I do not hesitate to condemn both of these customs as inhuman, cruel, incomplete and dangerous. The naso-pharynx is extremely sensitive, as is obvious to any one who considers the nerve supply, and the pain caused by the operation is extreme, and cannot be overcome by the use of a local anesthetic when used within the bounds of safety. It is quite well known that children do not take cocaine well. The shock to the nervous system caused by the terrifying sight of blood and

the accompanying pain is a matter of no small moment; and, should the growth return, which is liable to occur when incompletely removed, the parents will often allow the child to suffer almost to a point beyond recovery, rather than submit to the experiences of the first operation.

It has been my custom ior the past fifteen years, both in private practice and in the several orphan homes under my care, to perform as thorough an operation as possible. In the majority of cases, I use both the adenoid curette and forceps, under a general anesthetic, preferably chloroform (given to a point barely to overcome the ocular reflex), with the child placed on its side, and the head held well beyond the end of the operating table by an assistant, with the mouth turned slightly downward to allow the blood to escape through the nose and mouth. As in all operations, every surgeon has his favorite instrument, but for the removal of this growth from the fornix and posterior wall of the pharynx, I prefer a sharp curette with the fenestra as wide at the shank as at the cutting blade. The size of the instrument should be in keeping with the size of the naso-pharynx. As soon as the curette is passed behind the soft palate, it should be pressed upward and forward until you encounter the superoposterior portion of the vomer before you make your backward and downward cut. I have found Barnhill's curette made by Meyrowitz, and which is hand-forged, the most satisfactory yet tried. In the hands of an experienced operator, this portion of the growth should be removed with one sweep of the instrument. For the removal of any part of the growth that may be in the fossæ of Rosen Muller's, Quinlan's or Gleitsmann's forceps should prove adequate.

I appreciate the fact that the use of chloroform in this operation is fraught with some danger, as a number of deaths have been reported from its use. This, I am inclined to attribute to the chloroform being given beyond the point of safety, or to carelessness on the part of the attendants in allowing the child semi-conscious and crying to turn on its back while the wound is yet bleeding. Such an act favors

the inspiration of the blood into the larynx, which may produce spasm of the glottis, or, coagulation which may strangle the child to death, and the chloroform be blamed therefor.

The removal of the growth is of all things the most essential. The subsequent local treatment is so simple that an antiseptic saline spray usually suffices. Constitutionally the administration of syrup of the iodide of iron has proved of decided benefit.

In conclusion, I desire to emphasize that whenever a child presents any of the symptoms of post nasal obstruction, and, upon a thorough examination, adenoids are found, they should be removed at the earliest possible moment.

Discussion.

Dr. H. R. Slack, LaGrange: I have enjoyed very much the reading of these two papers because I think they deal with a subject on which the profession and the general public need to be enlightened. The importance of the removal of these growths should be taught to the public and I am glad to see that this subject is being taken up by the popular magazines; this will do a great deal of good.

I heartily agree with what the essayists have said on the importance of a thorough operation. I was educated in a school where it was considered a very ordinary operation and I have seen the operation performed with the finger nail and other imperfect methods. The result of such operations has been to bring the operation into discredit and parent have been much disappointed. I have abandoned such methods and now use chloroform anesthesia in almost all these operations. I prefer chloroform for three reasons: first, children bear chloroform well, it only takes a few whiffs, the hemorrhage is very much less than with ether, and there is seldom any vomiting. My experience is that we often have adenoids without enlarged tonsils and vice versa. For the removal of adenoids I prefer the curette, but have no fault to find with the use of the forceps, especially if the people want to see the results of the operation. The curette,

however, is more apt to remove the entire growth. I have never had any trouble with hemorrhage in young patients.

Dr. M. A. Clark, Macon: I am just a doctor and I do not operate for adenoids, but am often consulted as to whether the operation is necessary and it is therefore important for me to know in order to be able to properly advise the parents. According to the essayists to-day I probably don't advise the operation often enough. There are instances, I think, when the growths should be removed, but I don't agree that they should always be. Where there is interference with nutrition, hearing, or nasal breathing, operation is of course indicated but my experience has been that none of these cases have gotten well after being operated upon unless treated properly afterwards. They have had to come back afterwards for further treatment. In a great many cases where I have thought operation not advisable I have found that with proper treatment, of a tonic nature, they have, from my standpoint, gotten along well without being operated upon. In the last ten years it has been my duty to look after the Orphans' Home here and of course we do not get selected children there. Yet there have been few instances in this institution where I have found it necessary to advise operation. Perhaps I do not advise it often enough. It is a very important matter for the general practitioner. The specialist may easily get into the habit of overlooking other causes of a general nature. I advise my patients to always consult their family physician before considering an operation. A careful, studious family physician is in a better position to advise in the matter than is the specialist.

Dr. S. A. Visanska, Atlanta: I think this is one of the most important questions that is to come before the society at this meeting. These growths give more trouble and discomfort than any other pathological ailment from which children suffer. They cause deformity of the chest, of the mouth, and I do not think it was intended by nature that the mouth and nose should swap places as to their use. When you have enlarged tonsils and adenoids that is what

they do. The child has to breathe through the mouth and not the nose. Now just when to operate is a question. Personally I always advise operation whenever there is any obstruction to respiration. If a child is a mouth-breather, or if the tonsils are so enlarged as to cause difficult nasal breathing and the patients do not get sufficient air, an operation is urgently indicated. Then, too, all kinds of bacteria are taken into the lungs through these avenues. This is especially true of tuberculosis and there is a great deal more tuberculosis among infants than is generally supposed. I believe in early operation, especially when there is any obstruction whatever.

Dr. W. B. HARDMAN, Commerce: I do not think men engaged in the general practice of medicine should refer all their cases to specialists. If we send our adenoid cases to the throat specialists and the lung troubles to chest specialists, and so on, after a while the practitioner will have little to do but distribute his cases to the specialists. It is impossible to send all these cases to the specialist and have them go into a hospital and take a general anesthetic. A lot of them get well under proper medication. The man in general practice ought to be able to do this work. He should be able to remove the bulk of the tonsil and the greater part of the adenoids and in doing this will get marked improvement. While he may not go down and "get all the roots out," he trims it down to where nature wants it to be. When we refer the case to the specialist, however, we should leave it to him as to what should be done.

Dr. T. J. CHARLTON, Savannah: As a general practitioner myself I want to advocate the thorough removal of the tonsils and adenoids when indicated and it should be done by the specialist. I have encountered in my practice quite a large number of cases in which these have been imperfectly removed and in which the symptoms for which the operation was undertaken have continued. When we consider the effect upon the growth of the face, especially of the bridge of the nose and the dental arch, and the deformity which

may be left throughout life; and when we consider the number of pulmonary troubles produced by improper breathing, I think the sooner we recognize the evil effect of these growths and the sooner they are thoroughly removed the better; and it should always be done by the competent specialist. I agree with Dr. Roy that it is an operation which requires great skill; I don't consider it a minor operation. Personally, I would not care to undertake it. I do not think the man who does that operation incompletely does his patient justice. We should first consider the interest of our patient and if some other man can do the work better than we can we should take the case to him regardless of what it means to us. I thought a few years ago that the operation was probably done too frequently by the specialists, but the more I observe the condition, the more I am convinced of my mistake and the more I am convinced of the importance of thoroughness in this operation. Partial removal does not relieve the condition at all.

Dr. V. H. Bassett, Savannah: A few words from the standpoint of the pathologist may be worth while. We are fortunate in having had two papers along this same line, but from somewhat different standpoints. I have been interested in the removal and pathological examination of the tonsils post mortem. It is very easy to do this post mortem and I have taken out a good many and the thing that has greatly impressed me is this: practically all of the tonsils of adults show ulceration in the depths of the crypts; the epithelium is necrotic and there are ulcerated surfaces. This is a reason why the specialist should deal with this condition for the incomplete removal with the tonsillotome does not reach this condition at all. Results obtained by tests with animal injections have shown the greatest amount of infection. Medical school inspection has shown a tremendous percentage of adenoid growths among school children. They have often escaped the attention of the physicians. Anatomically the tonsils have been shown to have very limited deep lymphatic connections which may account for the difficulty

in establishing the relationship of these glands to tuberculous infection; the absorption is slow. There is much evidence to-day that articular rheumatism is due to a streptococcus and I think Osler always regarded it as having a distinct relation to tonsilitis of streptococcus origin.

Dr. M. M. STAPLER, Macon: Before operating for adenoids the specialist should advise with the family physician, because there may be some idiosyncrasy or pathological condition which would cause him to change his opinion. I had to defer operations in two cases recently; in one the general practitioner stated that the child was just out of bed from measles, the other was not fully recovered from facial erysipelas. These patients had not stated these facts. In ear affections, I would stress the necessity of clearing out Rosenmuller's fossa when the adenoids would not be indicated from the breathing, or general appearance. It should be the rule of the general practitioner to have diseased adenoids and tonsils promptly and thoroughly removed. A specialist should be the better judge of whether the operation should be performed, and when, and how. The early removal of diseased tonsils and adenoids is potent in preventing disease.

Dr. DUNBAR ROY (closing discussion): The paper was written without any idea of boosting the specialist, nor do I wish to boost one man over another. Any one is privileged to operate on these cases if he thinks he can do the patient justice. Dr. Clark makes the mistake of looking at the question only from the standpoint of the general practitioner who doesn't see these cases later on in life when they have nose and throat affections as a result of not having had these growths removed at the proper time. They come to the specialist later on in life after the development of these troubles. I am always willing to profit by my mistakes. If I find that I have been doing anything wrong I am willing to change. I used to operate often without giving an anesthetic. I have also operated with chloroform anesthesia, but I finally found that I was making a mistake and that I was not getting the results. I therefore abandoned it and

took up the method I have described to-day. I use ether because it is safer. Statistics show more deaths from chloroform in these cases than in any other class of cases. I have abandoned chloroform, although I used it for quite a while. I wish to insist that there must be thorough anesthetization in order to have a thorough operation and we must have good light for dissecting out tonsils. The clipping off of the tonsil is not the operation of the present day; it is the dissection out of the tonsil, not only of those that are enlarged, but the buried tonsils situated down beneath the folds of mucous membrane and filled with cheesy material. You must remove every possible source of infected tissue. It is barbarous to try to remove adenoids without anesthesia, and often produces a shock from which the children do not recover. Besides the operation can not be done thoroughly in that way. With the patient properly anesthetized the tonsils and adenoids can be thoroughly removed and good results will follow. Very frequently after these operations we do not get the good results immediately. The child may still breathe through the mouth for months afterwards. The way to overcome that is to compel the child to become a nose-breather. This may be accomplished by sealing the mouth with isinglass plaster at night; in a short time you find that the child will sleep with the mouth closed.

Dr. J. Lawton Hiers (closing discussion): I wish to thank the gentlemen sincerely for their liberal discussion of this important subject. I have always contended for a closer fraternal co-operation between the specialist and the family physician, for under such conditions the patient will be better served.

My reason for advocating chloroform in preference to ether is because the adenoid operation takes but a few minutes and I have found in something like thirteen hundred operations that I have had no bad results follow. I always insist upon good electric light and that the operation be done in a hospital with the necessary attendants.

There has been some reference made to the matter of the

child continuing to breathe through the mouth after operation. There is one point that must be remembered; that is where the child has been breathing for years through the mouth we must expect that the nostrils will be small and contracted and that the patient will continue to get some air through the mouth for a time. Before the child is permitted to retire the nurse should give the nose a thorough cleansing with the spray.

As to school inspection, the laws of our State should compel every school to be under the supervision of the general physicians and specialists. Adenoids are one of the greatest handicaps to childhood of any that they are heir to. I hope the day is not far distant when we shall have systematic examination of all schools and orphan homes. In a recent examination of one institution I found 40% of the children suffering from adenoids.

As to the use of the curette if one remembers in placing it to carry it well up until it encounters the superior posterior portion of the vomer before making the downward and backward sweep he will remove the growth without trouble.

HOW TO ABORT ACUTE GONORRHEA.

BY W. L. CHAMPION, M. D., ATLANTA.

In the average text-book there is so little space given to the abortive treatment of gonorrhea, and in a few the fact that the disease can be aborted not mentioned at all, prompted me to present the method I have used for the past few years, which is safe, and, when employed at the proper time, successful.

It is indeed strange, with our increased knowledge of the disease and the improved methods of treatment, some recent text-books advise no local treatment until the acute stage is passed. With very few exceptions the cases I have been called upon to treat where internal medication alone had been used presented a variety of complications that as a rule could have been prevented by early local treatment.

It is my custom to inform all patients I treat with a specific urethritis, should they be so unfortunate as to contract the disease again or suspicions of the disease developing, to see their physician at once, as it can be aborted if seen in time.

The idea of delaying local treatment when so violent a poison is within reach, and one that spreads so rapidly, appears to me, foolish. There is no other disease or infection even of a less violent type, in which we would advise no treatment until the active stage had abated. With the exception of the cases with such complications as epididymitis and acute prostatitis, when active local treatment is contraindicated for a time, I always commence local treatment at sight, whether I attempt to abort the disease or not. Internal medication is very helpful in treating gonorrhea, but with the method of aborting the disease which will follow, it has no place. The gonococcus sticks so closely and long to the in-

dividual it attacks, that a gonorrhea cured in two or three weeks might be considered aborted; but the cases I will report, were cured with three to six applications; in other words, cured in from three to six days, but kept under observation without treatment for two or three weeks to satisfy myself the patients were well. None of the cases here reported are relapsing gonorrheas. About one-third were first attacks, and the other two-thirds had not had an attack within twelve or thirty-six months.

Within the past fifteen months. I have aborted thirty-seven cases of gonorrhea with a three per cent. solution of nitrate of silver. All of these cases were seen in three to six days after exposure or before the gonococcus had involved the deeper structures. It is useless to attempt to abort the disease with a silver solution if there is a purulent discharge, or the disease is of several days or weeks duration. Only a small percentage of patients report for treatment to the physician as soon as the disease is noticed, but the genito-urinary specialist has a larger field to draw from and the thirty-seven cases here reported were successful out of thirty-nine cases treated, and in these two I think the disease was of longer standing than stated by the patients. I do not rely altogether on the statement made by the patient, but largely on what I see, as to whether to use the abortive measures. These thirty-nine were selected cases and I have not included other acute and chronic cases, treated during this period, that were of too long standing to use abortive measures. As stated the thirty-nine cases here reported gave a positive history of an exposure under six days and most of them within four, and the appearance of the meatus was evidence of just beginning gonorrhea. In every case a smear was obtained, stained, examined, the gonococcus found and the silver solution applied to the uretha at the first visit. It is important to examine the specimen while the patient is in the office so as to apply the solution at once if the gonococcus is present, as a delay of twenty-four hours will lessen the chances of aborting the disease.

When a patient presents himself after an exposure of three or four days with his meatus a little red, a slight burning on urination, a muco-purulent secretion, and the microscope shows gonococci, I cleanse the penis thoroughly with a one to one thousand solution bichloride of mercury and then, compressing the urethra about three inches from the meatus with thumb and forefinger of left hand, inject, with a cone-pointed penis syringe, a three per cent. solution of silver nitrate, into the uretha, not allowing it to pass deeper than three inches or where the left hand compresses the uretha; or, in other words, I cleanse the first two or three inches of the urethra with a three per cent. solution of silver. The solution produces a severe burning sensation which I relieve in three or four minutes by injecting a one per cent. solution of cocaine, which stops the pain immediately. Occasionally the pain will return in two or three minutes and it is necessary to make a second injection of cocaine, which will give permanent relief. On the second day the same treatment is given; on the third a two per cent. solution of silver is used in the same manner; on the fourth, a one per cent. solution. Ordinarily the four applications are sufficient to abort the disease, but if the urine shows shreds or pus I inject one-half of one per cent. solution of silver on the fifth and sixth days. I then have the patient report at the office once a day for several days and note if the urine is clear. If so, no other treatment is used. During the treatment I get three or four smears and examine for the gonococcus. A few hours after the silver solution is used there is a profuse discharge but the next morning none will be seen and the patient exclaims he is well, and judging from the appearance of the meatus and a specimen of the urine in a clean glass, it looks as if the first injection had perfected a cure, and I think frequently it does but I consider it safer to use the second, third and fourth injections. In treating cases as described I do not give the patients any drug internally, or injection to use, but have them report at the office and use the silver solution once a day.

In using the solutions as outlined, there is no harm done to the urethral mucous membrane. I have examined with the bulbous bougie and urethra-meter the urethras of a large number of patients so treated, and there is no stricture produced. The urethra-scope will show a normal mucous membrane.

313 and 314 Prudential Building.

A METHOD OF CURING QUICKLY BEGINNING GONORRHEA BY SEALING ARGYROL IN THE URETHRA.

BY EDGAR G. BALLENGER, M. D., ATLANTA.

Among the various methods that have been suggested to abort gonorrhea in its early stages are urethral injections of a solution of nitrate of silver; irrigations with a relatively weaker solution of nitrate of silver; applications of a stronger solution of nitrate of silver through an endoscope; holding strong solution of protargol for fifteen minutes in the urethra; injections of fifteen to twenty per cent. solution of argyrol every two hours for three days; and a number of other methods more or less like those just mentioned.

Most of these produce active inflammation and, if all of the organisms are not destroyed by the treatment, the urethritis is aggravated and its course is intensified. The success which occasionally followed the frequent injection of argyrol, when the inflammation produced by such frequent treatments did not necessitate their discontinuance before the disease was cured, led me to adopt the plan of sealing the medication within the urethra, where it might remain for a long time in contact with the mucous membrane. So successful was the method that I desire to embody in this paper a few of the facts that have been brought out by a rather extensive use of this procedure in gonorrhea during its beginning, acute, sub-acute and chronic stages, and in urethritis caused by other pyogenic organisms.

To abort the beginning disease one, naturally, must select patients in whom the gonococci have neither penetrated deeply into the mucous membrane, nor have extended into the deeper part of the canal; consequently time is a matter of vast importance, and here moments may truly be said to be "golden." Time alone, however, is not the only factor, as

the inflammation may spread extensively before the discharge appears, or rather before the patient notices it. Patients have been cured quickly after the lapse of a week, during which time the inflammation was controlled by appropriate remedies, while others have been unsuited to this treatment within a few hours or a day after the discharge was first observed, as was demonstrated by the presence of pus in the urine passed after irrigating the anterior urethra with warm, sterile water. Thus it is shown that much care must be exercised in the selection of patients who are to receive the abortive treatment, if immdiate results are to be expected. Naturally it would exceed the bounds of reason to expect patients to respond when the gonococci have so extended that the medication cannot reach them. Even when conditions seem appropriate a few organisms may have extended already into a follicle where they are protected from the germicidal action of the argyrol, and so failure may occasionally occur. Failure to abort the disease, however, does not mean total failure, for instead of making the subsequent course more severe, as do the stronger remedies, as nitrate of silver and protargol, the subsequent course is much milder; in fact with small doses of gonoccic vaccine every other day, and a continuation of the "sealing in" treatment given daily, or irrigations of potassium permanganate, these patients make much more rapid progress than do the patients not so treated. A notable feature is the freedom from pain on urination and the almost uniform absence of chordee, no inflammation or irritation is produced and stricture can not be caused, as sometimes it is from the unsuccessful or careless use of the stronger remedies. Four patients have not been cured as they should have been for the following reasons: Two were progressing entirely satisfactorily when I added a small amount of cocaine to the solution of argyrol being used at the same time on a third patient with a hyper-acute urethritis, my object being to lessen the pain of which the latter patient complained. This seemed to destroy all of the curative power of the argyrol and made it actually irritating;

two others who were being treated with anti-gonococcic serum sealed in the canal in connection with the argyrol were made worse by a particular lot of the serum, which, unlike the other I had used, seemed devoid of any bactericidal action. (A further report of this method will be made at some future time.) Several other patients were not cured because the argyrol was not kept in the canal for a sufficient length of time and the patients were so engaged that they could not return for the medicine to be again sealed in the canal; such patients cannot be properly classed with the failures, as they did not receive the proper treatment. I can now seal it in the canal so that it can not escape, and consequently such failures need not occur in the future. Twenty patients have been cured in from three to seven days, none has had a relapse, and one patient tested his cure by getting drunk on the fifth day without the appearance of discharge or any other urethral symptom. Often, when taken early, the discharge will disappear after the first treatment and will not again appear.

Acute urethritis, beyond the abortive stage, has been promptly and distinctly benefited by this treatment, bringing the inflammation more quickly under control than do other methods. More care, however, is required in such cases and it is recommended that considerable experience be acquired in early and in chronic cases before this method be tried in acute ones.

Simple chronic anterior urethritis, without complications, often yields excellent results by this treatment. Chronic anterior urethritis, however, without deeper infection, is comparatively rare. In acute urethritis not caused by gonococci, but common pus germs, this method gave results much more satisfactory than it did in gonorrhea, many patients being cured with from one to three treatments. Chronic infections of the urethra with organisms mildly pathogenic which produce a slight discharge, perhaps perceptible only in the mornings, and often very persistent, are at times quickly cured by sealing argyrol in the urethral canal. The

infection in some of the successful cases of both acute and chronic urethritis was, undoubtedly, not limited to the anterior urethra; I think that the success here depended on the fact that a certain amount of the medicine spreads to the deeper parts by capillarity or otherwise and thus reached all of the inflamed area. This, however, cannot be depended upon to take place, except occasionally.

The treatment is very simple, and briefly, is as follows: The glans, penis and foreskin are well washed with soap and water; the patient then reclines on an operating table or chair and a clean towel is placed around the penis so as to protect the clothing; a small piece of cotton saturated with a five per cent. solution of cocaine is then placed on the meatus so as to prevent the slight pain that would follow the application of collodion, then ten to fifteen drops of an eight to ten per cent. solution of argyrol are injected into the canal with a hypodermic syringe with a bulbous point, as the one demonstrated. The thumb and finger holding the glans back of the meatus are tightened and the syringe removed; the parts are then dried and a small amount of collodion is applied over the meatus as its sides are pressed together; this is held for about two minutes until it has well dried. In order to facilitate the removal of the collodion when the patient desires to urinate a small piece of cotton is so held on the glans penis when applying the collodion that part of it will be covered with collodion and part of it left free to pull upon in removing the collodion. The argyrol should be retained until the patient wishes to urinate. In order that the full effects of the medicine may be obtained only a small amount of liquids should be ingested while the treatment is being carried out. If the meatus is of small size a piece of zinc oxide adhesive plaster one inch wide and one and one-fourth inches long may be stuck over the meatus to retain the argyrol. The plaster may be easily removed with benzine. Less experience is required, however, in using the collodion, and with it the canal may be sealed with more certainty of success. Two treatments

should be given daily for two or three days, and one treatment daily for one or more days according to the conditions.

In the treatment of the conditions not amenable to the abortive measures the argyrol should be sealed in the urethra once daily, with occasional irrigations and small doses of gonococcic vaccine every other day.

The plaster is less likely to produce irritation of the meatus than is the collodion and should be used in the cases which are not quickly cured, when it holds properly.

1013-14 Century Building.

Discussion.

Dr. A. L. Fowler, Atlanta: I have enjoyed listening to these papers very much. Regarding the Abortive Treatment of Gonorrhea my experience has been very much along the line of Dr. Champion's, with the exception of two cases which I was unsuccessful in aborting. For some time I was at a loss how to account for these failures. While talking one day to Dr. Follen Cabot of New York, he related to me the case of a man who, in order to prevent impregnation, had sealed up his meatus with adhesive plaster and after intercourse had failed to find the plaster. Some time later the man developed a cystitis and after treatment by several urologists came into the hands of Dr. Orville Horwitz of Philadelphia who, by a suprapubic cystotomy, found the cause of the man's trouble. The plaster he had used to seal his meatus had been sucked into the bladder cavity.

This case, which is authentic, shows conclusively that there is a so-called suction produced during the orgasm and that a foreign body or semen may be sucked into the posterior urethra or bladder.

It also served to explain why some cases fail to be aborted since the gonococci in suspension with the vaginal secretion are occasionally sucked beyond the point selected for applying abortive instillations.

Regarding the use of cocaine, which Dr. Champion men-

tions. I have found that, in my hands, a saline solution acts better in controlling the pain produced by the silver solution than does cocaine.

Dr. Ballenger's paper is brim-full of humor and to my mind is more amusing than instructive. Lest there be some here who might accept his paper in an altogether humorous vein I propose to discuss it for a moment seriously.

To treat gonorrhea by the plan pointed out would be a tragedy. The first principle of surgery taught to us is never to seal up a suppurating cavity and to drain such cavities from the most dependant position.

Next, if we introduce a sufficient quantity of argyrol or other silver salt solution we know that in order for it to do good it must be of sufficient volume to dilate all the folds and glandular openings; else how will the openings of Littre's glands in the floor and the lacunæ of Morgagni in the roof of the urethra be reached? Supposing that we do seal up the urethra with such a voluminous injection, why, the cut-off muscle after a short time reaches a degree of tolerance and permits the solution to flow backward—hence we have a sealed-up suppurating cavity with part of our injection in the anterior urethra and part in the bladder.

I firmly believe that there is not a single ophthalmologist in this convention that would, for one moment, seal up the eyelids of his patients suffering from gonorrheal ophthalmia and, if there is, I invite him to stand up.

Dr. W. L. Champion, Atlanta (closing): I am glad to hear that Dr. Ballenger has had such good results from the use of argyrol solution. I am frank to say I have not, although I have used it in 15 and 20% strength and in larger quantities. I have not sealed up the urethra, which may account for my failures.

In regard to the silver solution Dr. Ballenger seems to be under the impression that strong solutions will cause inflammation, which is not true. In any case of gonorrhea the solution simply produces a burning sensation.

I have tried the salt solution referred to by Dr. Fowler, but have not found it as good as cocaine.

Silver is recommended by most of the best men in the country. Watson and Cunningham say it should be used in strength of not less than 1%. Casper in his book recommends 1% solution. Green and Brooks use it in 2% solution. Taylor uses it in 3% strength. So do Lydston and White and Martin and others. If you will use silver solution in the beginning it will abort most cases.

Dr. E. G. Ballenger, Atlanta (closing): In reply to Dr. Fowler's remark about the principles of surgery, we need not worry ourselves about principles if we cure our patients. The discharge disappears and you are not draining an abscess, nor does it matter whether there is a dependent position or not, for the discharge stops. Where principles interfere with results I will discard principles any time to cure the patient. We should not be slaves to tradition because people in time past have believed in certain principles. If we digress a little from usual methods and get results it need not be looked upon with disapprobation.

Taken early I feel confident I can cure 90 to 95% of cases by this method and without a single complication and even if you fail the patient then responds more quickly to the rest of the treatment.

As to the question of pressure Dr. Fowler will remember that I cautioned against distending the urethra too much. If the solution runs back into the bladder the urine would be colored. It is not once in a hundred times that that occurs. I think it is unfortunate that it does not, as it would then cure more readily deep-seated cases. I often have patients come back to the office with the same plaster with which they left. I have shown the gonococci in the discharge and then examined the secretion with the argyrol back of the plaster and found none, showing that the growth of the germs is inhibited. The results are so satisfactory that I think the treatment worthy of a trial. I have tried most all other methods and I think more highly of the nitrate

than of any other, but if you fail with it you will at times have intensified the trouble. With this method there is no irritation and the patient suffers no inconvenience.

"CLINICAL FEATURES OF ACUTE PELLAGRA."

BY N. P. WALKER, M. D., MILLEDGEVILLE.

This paper is based upon personal observation of fifty-one cases of pellagra occurring among the colored female patients at the State Sanitarium.

During the year 1908, 629 colored women were treated at this institution. Of these, forty or 6.3% suffered pellagra. Of 176 patients admitted during the year, nine or 5.1% showed symptoms of the disease when received. The inroad of this disease makes it one of the most important with which we have to deal.

The first record of a case of pellagra in the institution was made in January, 1906. Included in the fifty-one cases are three which developed during the course of dysentery.

Etiological: Food products of Indian corn form a considerable portion of the daily diet. From April 1, 1908, to January 1, 1909, the corn meal used at this institution was raised at home. At all other times it was purchased, and to the best of our knowledge, was made from corn raised in the West.

In one instance the patient had been suffering from dysentery for six months before any symptoms of pellagra appeared. During this period the patient did not partake of any food made from corn, neither was she exposed to sunlight, except such as might enter a window facing north. In a second case symptoms appeared after a patient had been suffering from dysentery for three months. She had neither taken corn bread, nor had she been exposed to the sun. A severe vaginitis was noted in this case. A third case appeared late in the course of dysentery and presented marked skin lesions. Unfortunately, the nature of the dysentery in these cases could not be determined.

It certainly would not appear that corn products are the

causative factor in the first two instances, unless the toxins are retained for long periods of time before their symptoms are manifested.

Sunlight: In five instances patients had not been out of doors during a period varying from three to eight months previous to the appearance of the malady.

Age: Varied from six to seventy-five years.

Season: Of the forty-two developing in the institution, two began in January; one in February; two in March; two in April; three in May; three in June; one in July; four in August; five in September; ten in October; five in November; and four in December. Perhaps our cases are not sufficient in number to generalize from, but it would appear that there is a decided tendency to occur during the fall and winter months instead of spring.

Color and Sex: Without definite facts at hand it may be asserted that pellagra is more common among colored than white and oftener seen among the women than men.

Symptomatology: Inasmuch as it is extremely difficult to obtain reliable information from insane negroes, we cannot make definite statements as to what symptoms appear first. In the majority of instances dermatitis stomatitis and diarrhœa are noted simultaneously. Vomiting occasionally occurs, and slight elevation of temperature is common in the early stages. *Dermatitis* almost always symmetrical in position on extremities, usually so on neck and face. The skin covering the joints of the fingers is the most frequent seat of inflammation. The whole dorsal surface of the hands may be affected and it sometimes extends to the elbows, where it may be well marked. The face, neck and feet not infrequently show the lesions. In two instances dermatitis was seen on both breasts. In a third, a small area was noted on the umbilicus. Contrary to the statement of several recent writers upon this subject, involvement of the palmar surfaces of the hands and fingers does occur, as photographs will show. Slight involvement of the plantar surface of the foot has also been noted. Dermatitis varies

greatly in extent and severity. In the milder cases slight swelling and redness may be followed by desquamation without exposure of raw surfaces. In the more severe cases blebs may form within a few days of appearance of initial lesion. These blebs are filled with clear serum but may easily become infected. When the fluid is evacuated a thin gelatinous substance covers the exposed surface. Under this a reddish granular area is to be seen. Blebs have not been seen except on the extremities. One must remember in inspecting the hands of negroes, that more than fifty per cent. of normal adults show thickening and darkening of the skin over the joints of the fingers. This may easily cause confusion. When recovery takes place the former seat of the dermatitis is somwhat lighter in color for a time at any rate. The dermatitis may recur, and has, in the case of one patient, been noted three times within a period of four months. When it does recur it usually shows up very gradually and its real beginning can scarcely be determined. In the late stages comedones appear on the cheeks adjacent to the nasal folds, on the chin, and may extend to other portions of the face, giving it a somewhat characteristic appearance. *Stomatitis* also varies greatly in extent and severity. There is usually a reddening of the mucous membrane covering the inside of the cheek, the gums, the edges and under surface of the tongue and the floor of the mouth. This is accompanied by salivation. Following the inflammation a dirty whitish pellicle appears. This is most often seen on lower gums, behind the last molar teeth. It may not extend beyond this position, or it may involve any portion or all of the mucous membrane of the mouth. In one instance a small deposit behind the lower molar teeth was followed in 24 hours by an involvement of the whole visible mucous membrane of the mouth. Numerous ragged ulcers have been noted on the inner surface of the lips and cheeks and on the gums. Vaginitis occurred in about 12% of the patients. The inner surface of the labia show deposits similar to those seen in the mouth. A deposit within the vagina itself has not been

noted. *Diarrhœa* has at some time been present in every case. In two or three only was it absent in the beginning. The movements in the majority of cases do not exceed five or six daily, usually from three to six. In a few cases the number of movements reaches ten or twelve per day, but as a whole, the diarrhœa is not severe. Small particles of mucous and some blood occasionally seen in the stools. In the later stages constipation often replaces diarrhœa.

Nervous Symptoms are not so constant as in chronic form. Many of the cases running a very acute course do not show any symptoms of spinal cord lesions. In two patients afflicted with pellagra when admitted the symptoms of involvement of the motor tracts were extremely well marked. In one the clinical picture was that of amyotrophic lateral sclerosis and death was apparently due to bulbar paralysis. In one case only were there symptoms of posterior sclerosis alone; these were confirmed by autopsy. Just preceding death marked delirium may supervene.

A considerable general mental reduction is present in many cases. The often quoted tendency to suicide by drowning has not been noted. Of the patients who developed the disease while in the Sanitarium a few have recovered. The mental condition of these do not show any material change from the former condition. A condition somewhat similar to that noted in the mouth was seen in the nose of one patient.

Blood: The blood of one patient presented a typical picture of pernicious anæmia. Hæmaglobin 35%, red cells 862,000, whites 9,100; polynuclear cells 59.1, small mononuclear 32.8, large mononuclear 4.8, eosinophiles .4, myelocytes 2.8. In counting 500 white cells, there were noted 34 normoblasts, 15 megaloblasts and 5 free nuclei. The autopsy findings corroborated the clinical picture. Exclusive of this case the blood findings are of some interest in thirteen other cases in which partial or complete examinations were made. Hæmaglobin varied from 65 to 95%, red cells from 2,500,000 to 5,292,000. The white cells were decreased in

two cases, slightly increased in four, and within normal limits in six. In the differential counts no constant findings of interest were noted. Excluding the above mentioned case, nucleated reds were found in three of ten cases in which complete counts were made. One of the chief points of interest in this connection is the fact that nucleated red cells may be found comparatively early in the disease and when the halmaglobin is normal or above. A more extended study of the blood may yield some information of value. The association of intestinal parasites with pellagra is a matter of some interest. The feces of 32 patients suffering from pellagra together with a large number of control cases was made by Dr. Willets. Uncinaria was present in the feces of 11.9 per cent. of pellagra patients, and in 18.7 per cent. of the control cases. Strongyloides stercoralis was present in 16.6 per cent. of the control cases, and in 31.2 per cent. of the cases of pellagra. Other parasites were not increased. While we can not consider strongyloides as a causative factor of pellagra, the association is somewhat striking.

Mortality: Six patients were removed from the institution before the termination of the disease. Of the remaining 45, 28 or 62 per cent., died; 12, or 26 per cent., have apparently recovered; five patients are still under treatment.

PELLAGRA—A REPORT OF TWO CASES.

BY LAWRENCE LEE, M. D., AND ERNEST S. CROSS, M. D., SAVANNAH.

CASE A—Patient, colored woman, age 65. Born in Camden, S. C. Lived in Savannah eleven years.

Family History: Father died at old age of nephritis mother at old age of hemiplegia. One miscarriage. Two living children since, neither very strong. Son is forty years of age, has chronic rheumatism. Daughter thirty-five years of age, has utero-ovarian trouble. No history of any similar trouble to that patient has in any of family or friends of family.

Past History: When about sixteen years of age had ulcer on anterior surface of one of legs. It was obstinate and lasted four months. Ten years ago it recurred and a similar ulcer developed on the other leg. These have been untreated except by her, and although painful have not kept her from attending to any of her duties. Except for this has been healthy. She was active, energetic and always anxious to be busy. She never had to do hard work, only her own housework. Food of herself and family consisted to large extent of corn (corn bread, hominy, etc.).

Present History: Last spring or early summer, dorsal surfaces of hands became reddened and began to burn severely. Looked and felt like sunburn. Later, during the summer and fall, redness disappeared and left the skin pigmented, dirty brownish-black and covered with large, thin, dirty-looking scales. Small patch of skin on back of neck became similarly affected. No other symptoms except that the strength began to fail. The failure in strength increased until on January 1st it became so marked that she decided to consult a doctor. At this time she presented the following symptoms: Very weak, could scarcely go up and down

stairs or move about on one floor. Poorly nourished, anæmic, expression cheerful, skin over dorsal surface of hands and forearms dry, pigmented and scaly. Small patch of a similar nature on the back of her neck. Large ulcers about three inches in diameter over the anterior surfaces of both tibia. Legs were swollen and inflamed. Heart slow, drops beat occasionally, lungs were normal. Abdomen, negative. Stools normal, no eggs or parasites. No intestinal symptoms. Urine normal. Blood, leucocytes 5000, hæmoglobin 70%, R. 4,500,000.

Under mixed treatment of iron and wet dressings patient's condition began to improve, but during a warm spell about the middle of January the skin over the dorsal surfaces of the hands began to turn red, and it burned severely. Some slight digestive disturbances began. Diarrhœa on January 28th. Mixed treatment was discontinued. Legs better and continued to improve under wet bichloride.

Redness of hands gradually diminished during a dry, cold spell but on February 17th became very much worse, very red, swollen. Severe diarrhœa and she began to pass blood in movements. Diarrhœa and bloody movement continued with remissions until time of death. Condition of hands gradually, with intermissions, became worse. On February 28th vesicles and pustules began to develop on dorsum of hands. Fissures began to appear between fingers and later large areas over the dorsum of hands between the fingers became denuded and raw.

Digestive disturbances became worse until there were few things which the patient could eat. Milk, raw oysters, soft eggs, and toast. Patient thought that there was a relation between the condition of her hands and what she ate, for if anything disagreed with her her hands began to burn immediately. Patient steadily during March and April became weaker. Mental depression set in and grew steadily worse. About the 1st of April temperature rose to 100-103 deg. She became so weak she had to remain in bed. Bed sores developed over sacrum.

Eruption during March extended to face, forehead, cheeks, corner of mouth and also back of neck. The tongue and mouth became involved and she could open her mouth only about a half inch on account of soreness in the corner of her mouth. It was painful for her to chew or even swallow anything. She spit up a little blood once or twice, probably from the pharynx. For the last three days before death she was unable to swallow even fluids and was in a semi-comatose condition. Death occurred April 9th. Was unable to get autopsy.

CASE B.—Patient was a white woman, married, age 33. Saw her first September 28, 1908. At this time a full history was not obtained and thorough examination was not made, but she was given a permit to ward of hospital, where she could receive better food and attention than was possible in her home. As she failed to improve in the hospital, she returned home and came under my care a second time October 9th, 1908. At this time she presented the following symptoms:

Family History: Cause of death of father unknown. Mother died nine years ago of dysentery. Husband alive and well. Four children, all healthy. No history of any similar condition in any of family.

Past History: Patient lived in Georgia all her life, in the country until about five years ago, and in Savannah for about two years. Has been until the present trouble began, as a rule, healthy. Chronic constipation always. Food has consisted largely of corn, such as hominy, corn bread, etc. All of the family, however, have eaten same food as she.

Present History: Present trouble began in the spring (late), 1908, with digestive disturbances. Pain in abdomen, loss of appetite, diarrhœa, flatulence. Soon skin over dorsal surfaces of both hands and forearms became slightly reddened, and later began to become pigmented and to scale. Skin over forehead and back of neck later became involved. Symptoms increased in severity up to present time.

She now presented the following symptoms: Melancholy

expression, pale, thin, very weak, could not walk without support, stooping attitude. Skin over entire body somewhat rough and scaly. Over dorsal surfaces of hands and forearms, back of neck and forehead very dry, deeply pigmented, dirty brownish-black color, covered with large, thin, dirty-looking scales. Tongue slightly coated at times, but otherwise looks normal, but patient states that it feels dry, rough and that she has bad taste in the mouth. Heart and lungs normal. Temperature normal.

Abdomen distended with gas, walls very flaccid, recti widely separated, skin rough and dry. Tenderness generally distributed, but present more particularly over pelvic region.

Vaginal examination showed moderate amount of discharge. Slight tenderness in both fornices.

Urine normal.

Blood, red 2,500,000, W. 5000, poly 70 per cent. Small mono and transitional 25 per cent, large mono 4, eo, 1 per cent.

Stools frequent, four to ten per day, watery, dark, offensive, no blood or mucus, no parasites or eggs. Large number of unicellular bodies which looked like vegetable cells, the exact nature of which was unable to determine.

Treatment and Course of Disease.

Patient was given an initial dose of castor oil, and afterwards the bowel movements were controlled by bismuth and opium.

An iron and strychnine tonic and salol were administered. Hot bichloride douches. Diet restricted almost entirely to milk. Pain in pelvis and discharge cleared up rapidly, but otherwise patient failed to improve. Diarrhœa continued if bismuth and opium removed. Abdominal pain severe at times, weakness increased, and patient became more and more depressed.

At no time was there any temperature. Since, at her home, she could not receive proper food, care or attention she was finally persuaded to enter the Telfair Hospital, which she

did on October 31st, and passed from my care to the care of Dr. Cross, the resident physician.

At examination on admission cerebration was noticeably sluggish. The tongue was red, the skin everywhere dry, yellowish and inclined to desquamation. There was cloasma-like pigmentation of the face. On the backs of the hands and wrists, and at the points of the elbows, as also over the flexor surface of the left wrist, the skin was much thickened, cracked, peeling and brown in color, and there was a similar though less marked appearance over the back of the neck. In some places where the scales had fallen away, the underlying skin was thin and atrophic. The lesions were fairly symmetrical in distribution, apparently not painful or particularly annoying. Examination of the chest and abdomen revealed nothing of importance beyond slight abdominal distension. The deep reflexes were irregularly obtained, but there was no increase. The plantar reflex was normal and no change in sensation was to be demonstrated.

R. B. C. was 3,270,000 and the leucocyte count was 4,400.

The urine was negative except for a slight amount of albumen. Examination of stools obtained by rectal tube and maintained at body temperature was carried out daily. Pus and blood at first present rapidly disappeared under rectal irrigations. Diligent search was made for ova, amoebae and other parasites, but none were found. Mention should be made of the presence of certain large clear flexible cells containing greenish chlorophyll-like masses. These cells were about half the size of hookworm eggs, round or oval in shape. The greenish mass was sometimes in the centre of the cell and again formed a more or less complete band around the periphery, while in a few cells two of these bodies were seen. Methylene blue was imperfectly taken up by the green masses nor did it affect the remainder of the cell. The stools were liquid, yellowish brown and always particularly foul.

The patient was now in about the fifth month of the disease as far as can be learned. During the first six days in

the hospital, her temperature only occasionally reached 99.5 degrees, but thereafter ranged from 100 deg. to 103. deg. The skin lesions continued to improve at first, but later, although the scaly condition was less marked, fissures appeared and there was some redness as a result, but no true erythema. The patient was dull, with little appetite, and made no particular complaints. The bowels were irregular, for the most part moving once or twice a day, but on two or three occasions four to six times, without pain. Peristaltic movements were sometimes active enough to be rather painful.

She constantly became weaker, stomatitis became marked, abdominal distension was increasingly troublesome, mental dullness increased to coma and death resulted on the fifteenth day.

Before death the red blood cells had fallen to 2,384,000; the leucocytes were 5,200, and the hæmoglobin was 40 per cent. The red cells showed only a slight grade of poikilocytosis and there was no striking variation in size.

From the complete record of a very careful post mortem examination made by Dr. Bassett, I have made a summary.

The body was poorly nourished and showed previously described skin lesions of upper extremities and neck. There was scattering pigmentation of the skin of the forehead, upper chest, axillary regions and lower abdomen. The muscles were pale in sections, and the subcutaneous fat scanty. The liver was free and not enlarged. The spleen was small with a few soft adhesions. The appendix was short and small with some adhesions on median aspect. The lungs, except for a few small whitish firm areas, were normal. The heart was small, its muscle pale and soft, but otherwise normal except for slight nodular thickening at the edge of the mitral valve flaps. Section of the spleen showed brownish-red pulp with prominent trabeculæ and poorly defined malpighian bodies. The liver was rather bloodless in sections, soft, pale and greasy. The gall bladder, pancreas and adrenals were clear. The kidneys showed some infection at the boundary zone.

The lower ileum showed some diffuse areas of congestion on the peritoneal surface, and on section the transverse folds were prominent and thickened. There were punctate infection of the mucosa with erosion and irregular ulcers. The cæcum just below the valve presented two discrete ulcers, oval and about 1½x2 cm. in diameter with slightly raised edges. There were similar ulcers in the lower colon.

Scrapings were made at autopsy from four different levels in the intestine and showed the following:

(1) Upper jejunum, grey fœcal matter containing epithelial cells and bacteria.

(2) Two feet below the preceding situation, similar findings.

(3) Lowest two feet of the ileum where the mucosa was eroded. Here was a change in the bacterial flora and there were many actively modile forms including vibros, etc. There were also fat crystals and globules and in addition the same peculiar cells previously seen in the examination of the stools. In these preparations the cells were nearly all circular with a clearly outlined greenish granular mass in the centre. The cells did not stain with eosin and slightly if at all with methylene blue, while no change in outline followed the application of weak acetic acid.

(4) Colon just below cœcum showed bacteria and fat globules but none of these structures.

The cells just mentioned were not further identified, as they disappeared from the material in a few days. They may have been altered epitelial cells but against it were their definitive outline and uniform appearance as well as the rather charasteristic chlorophyll-like content. Much more closely they resembled a class of protozoa known as coccidia, certain forms of which commonly infest rabbits and dogs and which are supposed in cattle to give rise to a bloody diarrhœa. They have been found in man.

There is a very considerable mass of literature on pellagra and it shows a fairly well defined entity. Most of the description and investigation we owe to the Italians, to whom,

of course, is due the name of the disease, which signifies "rough skin." The earliest account of the malady was by Casal in Spain in 1750, who called it "mal de la rosa" from the earlier erythematoces appearance of the skin lesions, though without doubt the disease was correctly recognized some fifteen years earlier. The name pellagra was not applied until 1771, and we can only surmise as to the nature of the disease which at the end of the 16th century was known as pellagrella.

The disease spread rapidly over Italy, Spain, and Portugal and in the first named country so widespread was the epidemic that special hospitals had to be provided, and the number of sufferers or pellagrins was known to exceed 100,000. Certain parts of Egypt and Algiers were known as pellagra countries.

It seems a well founded fact that pellagra followed the introduction of maize into these countries, and we know that the use of corn was widespread after the discovery of America. In that case it is a little remarkable to see the course taken by the disease through Eastern Europe, India, Barbadoes, South America and Mexico to the United States where corn has all the time been grown so extensively. Two conclusions are possible: the disease may have existed unrecognized in this country, or for some reason not now apparent there is a new invader to be reckoned with.

In 1902 a case was recognized in a Portuguese sailor coming into New York, and Harris of Atlanta described a case of uncinariasis with pellagrous symptoms. Searcy of Alabama reported the first series of cases in 1907 and a sporadic case was noted by Merrill of Texas. In addition Moore of Georgia reported a case and series have been described by Babcock, of South Carolina, Harris of Georgia, Bellamy of North Carolina and Randolph of Florida.

The pathological anatomy of pellagra is by no means enlightening, but certainly many of the investigations have been made upon the chronic cases found in insane hospitals, in which the changes hardly differ from the findings in any

psychosis of long standing. A priori, one would expect more conclusive results from the study of acute cases. Sclerosis in the posterior lateral columns of the spinal cord is a common finding to be differentiated from tabes by the fact that the posterior roots escape. The crossed pyramidal tracks in lower cord segments are frequently affected, accounting therefore for spasticity sometimes observed in lower extremities as does the posterior sclerosis in the upper cord for the ataxia in the arms. There is also destruction in some of the anterior horn cells, but rarely is extensive enough to manifest itself as muscular atrophy of any significance. Unfortunately in our case, it was not possible to examine the central nervous system. Degeneration and destruction of intestinal mucosa has been found, as well as certain degenerative changes in the kidneys, adrenals and pancreas.

ETIOLOGY. The connection of pellagra with Indian corn has received various explanations but is not yet understood.

(1) By some the theory was advanced that corn was of small nutritional value and that the disease was only the manifestation of malnutrition.

(2) Various moulds and fungi have been credited with pathogenic properties.

(3) That it was a mycosis with the micro-organisms in question inhabiting the intestinal tract.

(4) An infectious disease of general nature, but the findings in the blood stream, etc., of bacteria have not been confirmed.

(5) Toxic substances may be produced in the maize. For this theory there is probably more proof than for any other. It is known that bacillus maidis develops only in imperfectly ripened or improperly dried corn, and is of such resistance that it is not destroyed by exposure to 100 deg. centigrade. Further, it has been shown that that organism an done or two others are able to produce when grown in maize or flour, a toxic substance which has a narcotic and

paralyzing effect upon white mice. This can be extracted also in alcoholic solution, suggesting as Berger remarks the possibility of danger from spirits made from diseased maize.

Pellagra occurs rather more commonly among women and the larger number of cases are from 30 to 50 years of age. It is not contagious.

SYMPTOMATOLOGY. Acute and chronic forms are to be recognized, the latter predominating, particularly in the older countries, but the late reports of the cases in the Southern States indicate a considerable number of acute cases. In either form the symptoms are most easily grouped under three heads, cutaneous, alimentary and cerebro-spinal, or the frequently quoted triad, "germatitis, diarrhœa and depression."

(1) *Cutaneous.* This group consists of various forms of erythema appearing commonly upon the backs of the wrists, hands, extensor surfaces of elbows, back of neck and dorsum of the feet. Vesiculation may follow and the blebs may later contain blood or even pus. The red stage tends to disappear and is replaced by a thickening and scaling of the skin where afterwards may be found an area of thin, shiny, atrophic skin. It is noticeable that the lesions are fairly symmetrical in distribution and have moderately well defined edges. The effect of the sun's rays upon the skin lesions has been rather widely discussed, but that some influence is exerted must be admitted in view of Searcy's mention of the varying outlines of erythema produced by the use of fenestrated gloves. Warm weather seems to favor the acute condition of the skin, so that in most cases it is characteristic to see the erythema recurring each spring for a number of years. The first case had exacerbations occurring in warm periods of the winter. That some cases manifest no skin lesions at all is recognized in the term pellagra sine pellagra, and Searcy states that 12 per cent. of his cases at the Mt. Vernon asylum were without skin lesions.

(2) *Alimentary.* Here we find changes in appetite, per-

haps more frequently anorexia. Pyrosis is a complaint. Colicky pain may occur and abdominal distention. The diarrhœa is perhaps the commonest symptom, usually painless, and though sometimes bloody, is more commonly described as "serous." In both of our cases the stools at times contained blood and were always foul. Stomatitis is noted as very characteristic and may vary from simple redness of the tongue to excessive salivation and ulceration.

(3) *Cerebro-Spinal.* In the chronic cases especially, the nervous system received the most injury. Giddiness, feelings of oppression of the head and general weakness are among the early symptoms. Tremors and spasms occur dependent upon toxemia, perhaps, at first, and later secondary to cord changes. Increasing muscular weakness may be followed by paralysis. The mental condition varies from one of depression and simple dullness of comprehension to true insanity, usually of a melancholic type, frequently eventuating in dementia. Some authors note a marked similarity to paretic dementia and not a few cases of pellagrous insanity have been admitted to asylums under the diagnosis of dementia præcox. Suicidal tendencies are not uncommon.

The course of the chronic cases is of varying length, five, ten or even fifteen years in some instances. Berger's description of such cases recognizes three stages.

(1) The patient feels unusual discouragement and bodily weakness with gastro-intestinal disturbances and perhaps diarrhœa, more commonly in the spring, and he notices an erythema of the exposed surfaces, which he may attribute to local poisoning, chemical effect, the sun's rays, etc., even though it may be followed by thickening and desquamation of the skin. Such a group of symptoms may occur annually for several years before a marked increase in severity announces the second stage. Salivation, colic and severe diarrhœa now appear, accompanied by more marked manifestations of nervous involvement, sleeplessness, vertigo, convulsive movements, melancholia, etc. In the third stage pre-

vious symptoms are of increasing severity while delusions and mania are steps in the progress toward dementia and death.

The acute cases are somewhat similar but much more rapid, even no longer than eight to ten days or they may be prolonged several weeks. In general there is less time for the development of nervous symptoms. Fever is often absent and in any case is moderate throughout most of the course of the disease, though toward the end there may be high fever. In case B fever ranged from 100 deg. to 103 deg. only in the last few days of life.

DIFFERENTIAL DIAGNOSIS. There are certainly other conditions whose resemblance to pellagra requires mention.

(1) Acrodynia, described as an acute epidemic erythema, is rare and is said to present definite differences from pellagra in the character and distribution of the skin lesion, injection of the conjunctivæ, œdema of the face and in the course, which is usually of favorable outcome.

(2) Sprue or tropical aptha seems to produce greater changes in the mucous membrane of the mouth and digestive tract and skin lesions are supposed to be absent, though Harris has recently detailed cases of sprue with inflammatory skin changes.

It is not impossible that further investigation may show a relationship among these similar conditions. Pemphigus, leprosy, ergotism and dermatitis venenata may have to be eliminated by the history and course.

PROGNOSIS. Acute cases of pellagra are practically always fatal. Patients in the earlier stages of the chronic form may be entirely relieved by change in diet. The outlook after mental change has appeared is, of course, unfavorable.

TREATMENT. Aside from removal of patient from unhygienic surroundings and the substitution of a suitable diet, treatment is largely problematical. Arsenic has perhaps met with greatest favor and may be very well given

as atoxyl hypodermically. Local conditions are to be met symptomatically. Iodine is said to relieve the burning and itching of the skin lesions. Protargol in doses of 1-3 of a grain daily has been advocated for controlling the intestinal conditions on the theory that an aspergillus susceptible to small amounts of silver may play a part. Hydrotherapeutic measures are useful to combat certain of the nervous symptoms, but cases with chronic mental change require asylum care.

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PELLAGRA.

BY H. F. HARRIS, M. D.

This curious disease was first described by Thierry in 1755, and shortly afterwards by Cosal. Since this time large numbers of observers have written on the subject, particularly Lombroso, Gemma and Tuczek—the last named particularly having given a very full and complete account of the malady. The word pellagra means raw skin (pelle agra), and is intended to describe one of the most characteristic symptoms of the affection. The disease seems first to have appeared in Spain, about 1735, and soon thereafter in Italy. At a still later period it was discovered in France and Roumania, and very recently cases have been reported from Austria, Russia, Poland, Egypt, Mexico and Yucatan. In the United States it was first described by the writer (1) in April, 1902, at the meeting of the Georgia Medical Association.

Not being in general practice and, therefore, coming in contact with but few patients, no other case resembling pellagra was seen by me for a number of years, and I gradually began to doubt the correctness of the diagnosis in this instance. This was in a great degree confirmed by the fact that no one else reported cases of the kind, and the matter gradually faded from my mind. A number of years later I encountered cases of an intestinal affection that to me clearly seemed to be sprue, and up to the present time I see no reason for changing my opinion concerning the majority of them. As I look back now, however, I am quite sure that several of the cases diagnosticated as this affection were in reality pellagra.

Since my first case was reported the malady has been encountered by quite a number of observers in the South, particularly in asylums. Within the last two or three years the

writer has seen quite a number of cases, most of which presented the typical symptoms of the disease, and there can no longer be the slightest doubt that the malady is not infrequent in the South. A thorough investigation of the inmates and the records of the various State asylums would certainly show that a large number of persons have suffered from the disease.

Some months after my first case was reported, Sherwell (2) presented a paper at the 1902 meeting of the American Dermatological Association in which he described a case of pellagra occurring in the person of an Italian sailor. In this article he referred to a communication that he had presented to the New York Dermatological Society about twelve years previously, describing a typical case of this disease, but none of the details are given. It is to be presumed that the patient was a foreigner and contracted the disease abroad. Following this nothing else appears to have been written on the subject until 1907, at which time Searcy (3) of the Mount Vernon, Alabama, Insane Asylum, reported a number of cases which were apparently pellagra, though the course of the disease appeared to be extremely acute, thus differing from the descriptions of the malady as it is encountered in the old world. Dr. E. L. McCafferty, one of the assistant physicians at this asylum, had seen the case that I reported in 1902. Since this time articles have appeared by Merrill (4), Bellamy (5) and Moore (6). An interesting paper on the subject by Babcock (7) has recently appeared in the American Journal of Insanity.

Below is given the histories of those instances of the malady observed by the writer:

CASE I.—M. W., age twenty-nine; unmarried, a farmer; was first seen on March 8, 1902. He was born in Appling County, this State, and has always resided there. His father died between sixty and seventy years of age of what was probably sarcoma, though concerning this nothing can be said definitely. His mother died at the age of sixty-three of paralysis. He has two brothers and one sister; the sister

and one brother have never been in good health, but neither of them has ever had any serious malady so far as is known.

The patient was brought up in rather unusual poverty for this part of the country, his father having died when he was quite young, and since that time he has been forced to labor for his livelihood. His bread has always been prepared from Indian corn, and this has continued his principal diet since infancy. The corn from which this bread was made has always been raised upon the farm upon which the patient labored, and he asserts that so far as he is aware it was never harvested in an unripe state, but feels sure that it was not always well protected during the winter, and that it was probably wet as a result of the driving rains that are very common in the South during the fall and winter season.

The patient asserts that he was perfectly healthy until about fifteen years ago, when he began to observe that in the latter part of the winter and spring he has never been so well as in the summer and fall months. This has gradually grown more marked until within the last few years his condition at these periods has been extremely bad. In the fall and early part of the winter he feels strong and vigorous, and weighs usually about one hundred and thirty pounds, but last spring his weight went down to ninety-eight pounds, and he was, during this period, very anemic and extremely weak. The exact time at which these attacks come on somewhat varies, but is usually from January 15th to February 15th, after which he grows worse and worse until May or June or early August he is generally practically well again. He states that last spring his condition was worse than ever before.

The first symptoms usually begin in the spring with loss of appetite, thirst and a feeling of malaise, all of which rapidly increase until in from six to eight weeks he is entirely unfit for labor of any kind. At these times he suffers to an extraordinary degree from melancholia, and freely asserts that he would much prefer death than to live on in his diseased condition. His legs become extremely weak, and he

himself calls attention to the fact that sensation to pain over his whole body, but especially in the lower extremities, is much below normal. He complains that all of his food tastes very salty, as the result of which he takes unusual quantities of water. He frequently has sudden sensations of heat over the entire body, varying sometimes with a feeling of chilliness; the former is much more common and pronounced than the latter, being oftentimes present to such an extent that he has a strong desire to immerse his body in cold water. In the spring, at the time when he begins his labors in the fields, his hands and arms and dorsal surfaces of his feet become greatly inflamed, blisters form in considerable numbers, followed by the formation of scabs in the affected areas. He suffers greatly from constipation, and has a strong distaste for food, particularly for bread made from Indian corn. During his sick periods he complains of a constant pain in the neck, and of tenderness and pain in the region of the stomach. He particularly complains of vomiting very frequently, this following immediately upon the indigestion of food. He has never vomited blood.

Present condition: With the exception of skin eruption he complains at present of all symptoms above described.

The patient is five feet six inches tall, and weighs one hundred and seventeen pounds. Both in walking and in sitting down he stoops decidedly. His hair is of a sandy color, the skin over the entire body is extremely pale, and especially in the face is thrown into numerous wrinkles. The skin seems to be somewhat thinned, is quite smooth and very dry; on the face, neck, hands and lower parts of the arms it is very much pigmented, being colored of a brownish hue, but there is at present no indication of any eczematous condition. He has very little beard. The fingers are somewhat clubbed and the nails are curved inward. The mucous membrane are, like the skin, extremely pale. The tongue is moist, shows indentations of the teeth, and its epithelium appears to be, in a large measure, absent. The teeth are small and quite a number of them are decayed.

The pulse averages 90, respiration 20, and the temperature 98 degrees F. On removing the patient's clothing he is found to be somewhat emaciated, and the entire body presents the extemely pale condition already referred to. Over the heart a soft, blowing systolic murmur is constantly heard, and varies very greatly in intensity at different times; sometimes it is heard loudest in the mitral area, while at others it is here scarcely perceptible, but is distinctly audible in the pulmonary artery zone, and can generally be distinguished in the region of the tricuspid. On percussion the heart is found to be normal in size, and the lungs present no abnormality. In the right memary line, the upper border of the liver corresponds to the lower margin of the fourth rib, and extends well downward to the lower border of the ribs. Just below the ensiform cartilage, and to the left of this, there is great tenderness. The stomach, however, appears to be of the usual size, and its position, as determined by inflation, seems to be normal. After an Ewald trial meal the total acidity of the extracted contents was found to be 64, HC1. 40 combined HC1. 4, phosphates 16. Neither the spleen nor the intestines present any abnormality. The feces were of a dark, brick-red color; on microscopic examination a great number of eggs of the ankylostoma were found. The urine is somewhat increased in amount, there being about 2,3000 cc. excreted in twenty-four hours on the average. The urine was of a light yellowish red color, its specific gravity 1012, and its reaction faintly alkaline. No sugar was detected, but at one time a faint ring of albumen with the ferrocyanide of potassium and acetic acid test was found; albumost was not present. The urea excreted in twenty-four hours amounted to 21.15 gms., chlorides 3.15 gms., phosphates 2.37 gms.; and sulphates 2.83 gms. On microscopic examination a few epithelial cells were found in the urine, and a solitary very hyaline cast; this cast was probably not a true one, and doubtless belonged to that class of bodies called cyclindroids that are sometimes encountered in the urine. On examination the number of red blood-cells

was found to be 1,760,000, the white cells 4,020. The blood only contained twenty per cent. of hæmoglobin. The red blood cells present decided, though not extreme poikilocytocis, and there are a number of microcytes and macrocytes. A few nucleated red cells were encountered. A differential count of the white cells after straining by Ehrlich's method showed the cells present in the following percentages: Small lymphocytes, 28 per cent.; large lymphocytes, 14 per cent.; transitional cells, 6 per cent.; polymorphonuclear leucocytes, 50 per cent.; eosinophiles, 2 per cent.

His eyes were kindly examined for me by Professor Roy, who has sent the following report of the condition found: Vision R. eye, 15/20; L. eye, 15/30. Vision in both eyes made normal by placing a minus glass of ½ diopter before each eye.

Retinoscopy shows ½ diopter of mypia in each eye.

Pupils in both eyes react well to both light and accommodation.

Perimeter shows practically a normal field with the exception of a slight contraction both nasal and temporal sides in both eyes, more marked in the right.

In both eyes the optic discs appear pale and very indistinct in outline. They look almost as if there might be a beginning gray atrophy. Throughout the retina the choroidal pigment causes the fundus to take on the appearance almost of a retinitis pigmentosa. The blood vessels appear normal.

From the foregoing it is seen that this patient presents all of the typical symptoms of pellagra, a disease which is now generally believed to be the result of eating fermented Indian corn. If this be a genuine example of the disease, it is the first case of the kind that has ever been reported in the United States, though instances of it have been observed in Central America.

This patient was successfully treated for his hook worms, and improved decidedly during the succeeding summer and fall. In April of the following year he wrote me that his

symptoms had recurred with the erythema on his hands and face quite marked. During the latter part of the summer and autumn he again improved, but was attacked again in the following spring, this time having more or less diarrhœa added to his other symptoms.

When last heard from, the patient stated he was in a very miserable condition, and it is doubtless true that he is long since dead, as I have not heard anything further from him.

Case II.—C. P. C., age sixty-three, female, white, widow, native of Georgia, was first seen January 24, 1907.

Family History: Father died of "indigestion." One sister and one brother of dysentery, and one probably of apoplexy.

Past History: About seven years ago, while living in Milledgeville, Ga., the patient had an attack of bowel trouble lasting a few months. She was sent to Rockbridge, Va., and was much improved from a course of alum waters of that place; continuing this treatment after her return home, she was finally apparently cured. Since this, however, she has had occasional attacks of diarrhœa lasting from two to five weeks. At these times most of the trouble comes on from 10 p. m. to breakfast time on the following day; during this period she would from one to eight stools—sometimes copious, and occasionally containing bloody mucus; no tenesmus. No history of indigestion.

Habits: Does not eat hot bread with butter. Takes one cup of coffee in the morning, but has not taken tea for five years. She eats much fruit, but not much sweets. She has false teeth, but chews well.

Present History: Present trouble began in November, as one of the attacks above described. A week or so later her mouth began to get sore, followed two or three weeks later by a similar condition of her throat. She was also affected with a like trouble in the vagina, accompanied by a whitish exudate.

Also suffered with salivation, some nausea and vomiting, and when first seen by Dr. Adams was having about twelve stools in twenty-four hours. During the last week the num-

ber has decreased to between two and three. She passes very little mucus, but no blood. The stools are greenish-brown in color, moderately soft and very offensive; movements very copious. No tendency at present for bowels to move during the night. There is no tenesmus. She has lost much flesh. General appearance anemic and moderately emaciated; skin and mucous membrane pale; tongue red on top and all round the edges; along the frenum it is covered with a whitish membrane. Some membrane also on the mucous surface of the cheek. Both mouth and tongue very tender.

Pulse, 80; respiration, 18; temperature, 99 to 100; blood, hæmoglobin 85 per cent.; white cells 20,500.

Feces whitish in color and very foul; reaction, acid; some bloody mucus present. On microscopical examination a few pus cells were found, but no amebas or other protozoan parasites. Hydrobilirubin present.

Physical signs all normal; liver appears not to be atrophied. Mucosa of labia and vulva contains whitish patches similar to those on tongue. Skin on back of thumbs and first three fingers of both hands is very red—evidently being inflamed; a similar condition is present between the thumbs and forefingers, at which site there is a small scab on the right hand.

The patient died February 25th. Before death her mind became very feeble, and toward the end was almost in constant delirium, sometimes low and muttering and then noisy. Her temperature just before death ran from 100 to 103.

CASE III. Mrs. K., age twenty-seven, female, white, married, native of Georgia; occupation, housewife; first seen February 2, 1907.

Past History: She had an abscess of the right lung from getting a watermelon seed in the bronchus. This occurred when a child, and her recovery was complete. Typhoid seven years ago. She moved to Nashville, Ga., three years ago. Some time after this she suffered from "indigestion," accompanied with formation of gas, and looseness of the bowels,

especially at night and in the early morning. Shortly afterwards she got better.

The trouble again grew worse in November, 1906, at which time she had diarrhœa, accompanied by slight fever.

Present History: Since the above date she has suffered from diarrhœa, having two to eight stools daily. She still complains of gas formation in the stomach and bowels, and of indigestion. Her mouth has been very red and ulcerated a number of times. It is now better, but still much inflamed and between the back molars of lower jaw the gums are somewhat ulcerated; it was impossible to tell how extensive this lesion is, as the patient could not be made to open her mouth sufficiently. Has pain in throat. Suffers from occasional attacks of dyspnea. Vomits often. Persistent vaginitis. Her husband, who is a physician says there is [illegible] ceration. The skin of the hands has become inflamed a number of times and is at present red and scaling on the back as far up as the wrist. Nervous symptoms severe. Occasionally she has slight clonic spasms. Mind dull and the memory is very much affected. She is much emaciated. Pulse weak and rapid—ranging from 90 to 136. Respiration, 20 to 32; temperature, 98 to 100; tongue reddish at edges, and denuded of its epithelium to a great extent; is slightly coated in the middle. Lungs, heart, spleen and lymph nodes normal. Liver dullness extends from the seventh rib to the lower border of the ninth.

Feces: Reaction neutral. Dark (bismuth) and very offensive. No amebas or eggs of parasites. No blood or mucus. Hydrobilirubin present. Blood not obtained.

Urine: Specific gravity, 1030; reaction, acid; albumen and sugar, negative; indican, not increased; both uric and hippuric acids present. The patient died February 6, 1907.

Case IV.—W. K., age 16, female, white, schoolgirl, native of Georgia; first seen May 9, 1907.

Family History: Negative.

Past History: Negative.

Present History: In February or March a year ago pres-

ent trouble began as a general decline. Had eczema on back of hands, forehead and neck. She suffered from amenorrhea. In June her bowels began to run off; no blood or mucus was present. She suffered from griping and frequent desires to go to stool. Her mouth was sore all during July, and this condition still persists with remissions and exacerbations from time to time. During October, November, December, January, February and March her bowels were regular. About a month ago her bowels began to run off again; there was an average of three movemests in twenty-four hours, occurring mainly in the forenoon. Stools copious and greenish or whitish in color. Belches frequently. Her general appearance is good. There is some acne of face. Tongue is red and bare. Teeth good. Pulse, 94; respiration, 18; temperature, 99.

Blood: Hæmoglobin, 100 per cent.; white cells, 10,000; red cells, 4,750,000.

After an Ewald trial meal 120 cc. of the stomach content was obtained. Chemical analysis showed total acidity 12, HCl. 0, CHCl. 8, acid salts 4.

The urine was examined with the following results: Quantity, 320 cc.; specific gravity, 1030; reaction, acid; albumen, trace, sugar, none; indican, very strong; phosphates, 1.76 gms.; chlorides, 4.48 gms.; urea, 8.8 gms.; microscope shows no cylindroids or casts. No pus or blood.

Physical Signs: The tongue is without its epithelial layer. There are no sores in the mouth at present. Erythema on posterior surface of the hands. No other abnormality found.

During the following fall and winter the patient somewhat improved, but grew worse in the succeeding spring and finally died.

CASE V.—J. W. age twenty-six, native of Georgia; first seen on June 29th, 1908.

Family History: Negative.

Past History: Except for the diseases of childhood, the patient was always healthy until last May a year ago, at

which time he was sensible of a failure of health; his appetite was poor, and he lost some flesh. He observed at this time that his strength was not up to the normal. In May there was more or less diarrhœa, which continued until the middle of the summer. After this he improved and felt fairly well during the fall and winter months.

Present History: During the spring just passed there was a recurrence of the symptoms noticed during the early months of the previous year, the diarrhœa having become very decided toward the end of May and first of June. There is a typical erythema on the back of the hands and wrists, with a slight ulceration in the center of the red area on the right hand. There is a slight erythema on the prominence caused by the protrusion of the cheek bone.

Physical Examination: On physical examination nothing was found abnormal except that the liver was slightly diminished in size. There was no ulceration in the mouth, but the patient complains of more or less soreness at times. The tongue is bare of its epithelium, it seeming to have been shed off. There are slight elevations on the tongue that look like minute blisters. This patient has no perceptible loss of sensation, and has not complained of articles of food tasting salty. For the last month or so a slight cough has existed, with more or less purulent expectoration. All of the internal organs appear to be normal as far as can be determined by physical examination. This patient is now under treatment.

Case VI.—Mrs. H., age thirty-two, native of Georgia, first seen June 29th, 1908.

Family History: Negative.

Past History: Patient was always well up to the beginning of the trouble with which she has recently suffered.

Present History: In the spring of 1906 the patient first noticed that her health was not up to the normal; this, however, was followed by no other symptoms until the following year, when at the corresponding period she began suffering from more or less indigestion, followed by loss of flesh and

weakness. Diarrhœa began in May, and continued until the latter part of September. During this period the back of her hands and wrists and her face exhibited the typical erythema of pellagra. She vomited a great deal during her illness. Under rest in bed and a milk diet she gradually improved and is now well, though the back of her hands and face are more or less pigmented. This patient was not seen by the writer during her illness, but her symptoms were related to him by the lady herself and her physician, Dr. J. B. Camp of Carrollton, Ga.

Symptomatology: The symptoms of the affection vary so greatly that Lombroso has not inaptly said that "there is no disease, there are only sick persons." All writers seem to agree that the symptoms vary, depending upon the locality, the character of the corn eaten, and racial peculiarities. Tuczek has described three stages of the malady, each of which, of course, insensibly merges into the other. In the *first stages* there is a greater or less length of time during which prodromal symptoms appear. The patients commonly feel for several preceding winters lack of energy without apparent cause, and more or less mental depression; they not uncommonly complain of irregular pains in the head, in the spinal column, or in other parts of the body. During the spring and early summer these symptoms gradually disappear so that the patient toward the end of July or August feels fairly well again. This condition of affairs goes on for a greater or less number of years and is followed by the

Second Stage: During the middle of the winter the patient loses his appetite, though in some cases the opposite condition is present; there may be also intense thirst or a distaste for liquids. It has been observed that there is often a very strong distaste for food prepared from Indian corn. There occurs, not uncommonly, heartburn, pyrosis and pains in the different parts of the body. At this period of the disease the tongue is coated. The region of the stomach is

swollen and more or less tender. Diarrhœa is not uncommon, though constipation is sometimes present.

Third Stage: In the final stage of this disease numerous nervous symptoms occur in addition to those already referred to. There are pains in the head, particularly in its posterior portion. A feeling of uncertainty and pressure in the head, vertigo, noise in the ears, sleeplessness; in some instances decided somnolence, pain in the back, head and in the spinal column, weakness and uncertainty in movement, particularly in the limbs; there is often a sensation as though there was a lump in the throat, with more or less choking. At the height of the disease reflexes are more or less increased. There is also a mental irritability, loss of memory, inability to think, lack of desire for physical and mental exertion, and very commonly the patient sinks into a condition of more or less profound melancholia.

As the name indicates, we commonly find in the latter stages of the malady a peculiar erythema on the exposed surfaces of the body, particularly on the back of the fingers, hands and forearm, and not uncommonly on the face. The tongue, which is in the beginning coated, now loses its epithelium and presents an appearance closely resembling that seen in sprue.

If the patient survives the attack he begins to improve in the early summer, and by July or August is generally again back in a more or less normal condition. Those parts of the skin that were inflamed during the height of the attack generally, however, continue to show more or less pigmentation for a considerable period of time.

As the disease progresses the patient becomes more or less anemic, and motility is seriously interfered with by a progressive weakening of the muscles. Sensibility is likewise affected. Paranesthesia, and more or less anesthesia, are not uncommonly observed, while pains in the various parts of the body are frequently complained of.

There is often weakness of the eyesight, double vision, musculæ volitantes, sensitiveness to light, and alterations in

the optic nerve. Ophthalmoscopic examinations sometimes show other grave changes within the ball, cataract being particularly common. The pupils are sometimes enlarged, more seldom contracted.

The taste is also perverted, the patient very commonly complaining that everything eaten tastes very salty. This symptom is so common in Lombardy that the affection is there known as salso, and in Spain as flema saliva.

The vasomotor nerves are not uncommonly more or less affected, leading to undue redness in some parts of the body, particularly the nose, and the œdema in favorable situations.

The skin irritation has already been referred to. This becomes, in many instances, so prolonged that it leads to the formation of ulcers in the affected regions.

The nails show the effect of bad nourishment. Nervous symptoms play a prominent part in the disease, often causing the unfortunate sufferer to be sent to an asylum for the insane. The patient suffers from a profound melancholia, with various delusions, which not uncommonly take on a religious character. Sometimes they attempt suicide, particularly effecting self-elimination by drowning. The patient is very stupid, as a rule. This melancholia is in the beginning more or less periodical, but at a later time becomes continued and profound, ending only in the death of the unfortunate patient.

The pulse and temperature in the beginning of the disease remain normal, but toward the end the former becomes rapid and the latter shows elevations; in some instances there supervenes a condition which, from its resemblance to typhoid fever, has been called *typhus pelligrosus*, which usually terminates fatally in from one to two weeks.

The quantity of hydrochloric acid is diminished except in the very early stages of the malady.

The quantity of urine is diminished.

Lombroso has found that chlorides, and particularly the phosphoric acid, are diminished.

Albuminuria is occasionally encountered.

If the disease occurs in the very young, as is the case in hookworm disease, development is greatly hindered. The classical pellagra is a disease which is often greatly prolonged; in some instances the fatal termination occurs in three or four years, in others it may be ten or fifteen years, or even longer.

At this point attention may be called to the rather curious fact that the reports from the various asylums give the impression that the disease, as it occurs in America, differs from the old world affection in that it appears here to be very acute. As will be shown further on, in speaking of the pathology of the condition, the above conclusions appear to the writer to be inaccurate. The mistake has probably arisen from lack of proper histories, as the patients observed in these institutions are almost uniformly from the lowest classes, and are never in a condition, when they enter the asylums, to give accurate data concerning their previous health. The pathological examinations done by the writer are so few in number general conclusions cannot perhaps with propriety be drawn, but the conditions found are so characteristic of some long-continued disease-process that it appears in the highest degree probable that the asylum cases are probably without exception chronic ones—the physicians in these institutions having only an opportunity to witness the final terminations. This conclusion is strengthened by the fact that these patients all show the mental changes that are so characteristic of the malady and that those cases seen by me, outside of institutions, have almost uniformly given histories of having been in ill health for a number of years.

It is a notable fact that in a large proportion of cases the exacerbations in the disease, as observed in America, occur in the latter part of the summer or autumn—in this way differing from the usual clinical course of the affection as seen abroad.

Etiology: The investigations of a large number of observers have shown beyond all reasonable doubt that pellagra is the result of eating improperly cured Indian corn. The

disease, then, is in the nature of an intoxication, resembling ergotism in its etiology, and also somewhat in its symptomatology. It is a matter of the utmost importance for our farmers to see to it that their corn ripens thoroughly, that it is not stored until it is absolutely dry, and that it should be so protected from the weather and dampness that those changes that occur in it, by means of which the pellagra poison is produced, cannot result.

The total number of cases of this disease in Georgia to-day cannot be calculated, but that a great number exist there can be no question. As the disease is one that produces a long period of invalidism, great suffering, and, in many cases, finally death, it certainly behooves those who are responsible to use every possible precaution to prevent the corn-fermentation that produces it. The exact nature of the changes that produce the poison in the corn have not as yet been determined.

Pathological Anatomy and Histology: The writer has unfortunately not had an opportunity of making extensive pathological investigations in this disease. He has, however, personally made two post mortems, and has the records and tissues from two other cases which were most kindly furnished him by Doctors J. W. Mobley and D. G. Willets of the State Insane Asylum. One of the cases autopsied by me was also an inmate of the above named institution, and the writer desires here to express his thanks to Dr. N. P. Walker for the privilege of making the examination. The other case was one under the care of Dr. Eugene M. Bailey of Acworth, Ga., through whose kind offices the post mortem was secured, and to whom the writer desires to express his gratitude.

Two of these patients were fairly well nourished, while the other two were decidedly emaciated. Barring the intestinal tract, nothing of moment was found in the chests or abdomens of these patients. The tongues of all showed either ulceration or thickening of the epithelial coating. The œsophagus was normal in all. Each showed hyperæmia [illegible]

on the mucosa of the stomach, and in one case a few ulcers were found. In three instances there were hemorrhagic areas in the intestines varying in size from those barely perceptible to others as much as 2 cm. in diameter, but no ulcers were detected. In one of the cases the mucosa of the entire small intestine was generally reddened, and in all but one a similar alteration was found in the cœcum. In one case the intestinal walls seemed thin. No gross changes of moment were detected in the brains of these cases. In one instance, not yet examined microscopically, the cord was unusually soft; in all of the others this viscus appeared normal to the naked eye. Time has not yet permitted a complete examination of the tissues from these cases, but in two of them extensive sclerotic changes were detected—being limited in one case to the anterior portion of the posterior columns, and in the other to the posterior columns and the crossed pyramidal tracts. The central canals are obliterated in the diseased areas. Changes of this kind occur very slowly, and it can hardly be doubted that these alterations are of a very chronic nature. A complete resume of the changes found in these cases will be found in the forthcoming report of the Georgia State Board of Health.

Below is given a short summary of the principal alterations described by foreign writers: The bodies of those dead of this disease are extremely emaciated. The heart shows, in many cases, brown atrophy, less commonly fatty degeneration. Endocarditis is sometimes encountered. Not uncommonly the aorta is atheromatous. The liver is frequently enlarged with fatty degeneration; sometimes brown atrophy is observed. The spleen is, as a rule, small. The kidneys show cirrhosis. The wall of the intestines, as a consequence of the atrophy of its muscular coat, is greatly thinned; the mucous membrane of the rectum and colon oftentimes shows he presence of small ulcers. There is frequently found hyperemia, anemia, and œdema of the brain and spinal cord; similar changes occur in the meninges with evidence of active inflammation in many cases.

Other cases carefully investigated by Tuczek show that the posterior columns of the cord were the seat throughout of a systemic degeneration, this being particularly marked in Goll's column. In six of these cases there was disease of the pyramidal tract. Curiously in every instance the central canals of the cords were completely obliterated. Dejerine has also demonstrated degeneration of the nerves of the skin in this disease. This was not confirmed by Raymond or Tuczek.

Diagnosis: The principal difficulty in diagnosticating this affection lies in the ease with which, in the later stages, it may be confused with sprue. The clinical pictures of the two diseases are very similar indeed, and cases undoubtedly occur in which it would be impossible to decide the true nature of the malady with absolute certainty. In pellagra the history of the case, the incidents of the symptoms during the end of the winter and their subsidence in July or August: and at a later time the skin eruption and the profound melancholia that usually comes on in the latter stages of the affection, would together serve to make a diagnosis clear. Unfortunately we have no laboratory methods by which it would be possible to arrive at a conclusion.

Prognosis: The prognosis of pellagra is extremely bad. Recovery can only be hoped for when the patient is seen early and is warned as to the character of the disease from which he is suffering.

Prevention and Treatment: The prevention of pellagra, of course, lies in avoiding fermentive changes in the corn used for food. Only those varieties of corn should be grown that ripen fully before frost occurs, and the utmost caution should be used to prevent its housing until it is thoroughly dry. A failure to observe these rules will bring much unnecessary suffering and many deaths to those neglecting them. Not only is the meal made from this fermented corn poisonous but it is said that whisky prepared from it is capable of giving the disease to those who drink it.

As to the treatment, of course, the first essential is to

forbid the patient to eat articles of food made from corn; unfortunately it is usually the case that when the patient is first seen the disease is, as a rule, so far advanced that this precaution is of but little avail. The medical treatment should be a symptomatic one. For the cerebral symptoms Lombroso has recommended tincture of coculus indicus in doses from five to ten drops; as the dose of this preparation of coculus is generally put down as from one to four drops, it would perhaps be better to begin with a smaller dose. Cerato has advised the employment of airol in doses of about one-half grain three or four times a day for from one to two weeks. For the itching and burning of the inflamed skin, cold baths, followed by applications of two per cent. carbolic acid, or four per cent. carbolic acid salve, has been recommended; cocaine salve, one to three per cent.; menthol liniment, camphor and choral hydrate have also been used as local applications. As a general tonic Lombroso has used arsenic, beginning with five drops of Fowler's solution and gradually increasing the quantity to the point of tolerance.

1. Harris, H. F.—Transaction of the Georgia Medical Association, April, 1902, page 220. American Medicine, IV, 3, 99.

2. Cherwell, S.—Tr. Am. Dermat. Asso., September, 1902, Chicago, 1903, p. 76.

3. Searcy, G. H.—Jour. A. M. Asso., XLIX, 1, 37.

4. Merrill, T. C.—Jour. A. M. Asso., XLIX, 11, 940.

5. Bellamy, R. H.—Jour. A. M. Asso., LI, No. 5, p. 397.

6. Moore, N. M.—Jour. A. M. Asso., LI, No. 13, p. 1077.

7. Babcock—American Journal of Insanity, April, 1908, page 703.

Discussion.

Dr. J. W. Palmer, Ailey: I have not heard anything said concerning the treatment of this disease. I had the pleasure last year of hearing a paper read by Dr. Babcock after his return from Italy. He suggested the use of some form of arsenic and used for a mouth wash hydrogen dioxid

which relieved the trouble in the mouth and he also gave it internally, 15 drops every two or three hours.

Dr. V. H. BASSETT, Savannah: I have had the pleasure of seeing the cases reported by Dr. Lee; they were comparatively new to me. There is not much to find in these cases. They resemble in every respect the toxemias due to vegetable poisons and some of the diseases associated with marked blood changes. There are marked degenerative changes in the organs, anemia and the changes in the blood and the typical lesion of the skin—symptoms such as we get in many forms of toxemia and in pernicious anemia.

Dr. C. M. CURTIS, College Park: I have had several cases with symptoms similar to those described, though I did not call the disease pellagra. I got good results from specific treatment.

Dr. L. M. JONES, Milledgeville: I have nothing new to add to what has been said more than to say that this trouble has existed for quite a number of years in our institutions; we have had it in our institution, I am sure, for years. We used to call it foot and mouth disease because of the eruption and the sore mouth. So far as the symptomatology is concerned we have had cases there brought to us in a state of acute mania, without ever having shown the eruption or sore mouth. These symptoms would appear sometimes after the acute mania. I have one case in mind that we had recently brought to us in which so far as the history is concerned there were no symptoms of pellagra before the acute mania appeared. The case was brought to us about six weeks ago, the patient in an exhausted and maniacal condition. After being with us a few days she began to rouse up and the nerve symptoms cleared up somewhat; she became more rational and quiet and seemed to improve mentally and physically. About three weeks ago the eruption appeared and the sore mouth and she only lasted about two weeks.

Dr. B. W. ALLAN, Columbus: These papers have been very interesting to me because of the fact that we are in the midst of some pellagra cases in our town and I have had

some experience with three or four cases. I should like to emphasize especially one point that has not yet been brought out and that is the subject of treatment. The first case we had we tried to treat entirely symptomatically. The first case I saw with another physician who invited me to see it —arsenic was given, but by the mouth. There is one point that should be emphasized—that if we expect to get results in this disease we can not depend on the stomach for absorption of the medicine. When you see a case with the tongue, lips and inside of the mouth completely ulcerated, and the mucous membrane around the spincter anni ulcerated you can understand that the stomach is in a poor condition for absorption. In our second case we gave the same treatment, but hypodermically, and the result was that the patient recovered, though this case was more pronounced in every respect. The patient went from melancholia into delusional insanity. She was dismissed well. The third case has been treated the same way, by hypoderm injections of arsenic. So far as my limited experience goes I am sure if we have any remedy at all we have it in arsenic, but we must not rely upon the stomach for its administration. Save the stomach for what nourishment you can get into the patient. In some of our cases we had to abandon the stomach even for that and feed with the rectal tube.

Dr. J. E. Paullin, Atlanta: Forty per cent. of recoveries seems to be an unusually large percentage, since most authorities state that pellagra is, as a rule, a fatal disease. I would like to ask the doctor if the recovered cases have been observed for six to twelve months from the date of their discharge.

Dr. N. P. Walker, Milledgeville (closing discussion): In reference to the question as to the disease being chronic or acute it is impossible with insane negroes to tell anything about this. We can not get any reliable history from these patients previous to admission.

In regard to treatment the drug that seems to be mentioned most favorably is atoxyl, a form of arsenic given hy-

podermically. Personally, I have used arsenic in increasing doses and so far as I could tell without any benefit. I used Fowler's solution in drops, 25, three times a day. The mouth condition is not difficult to treatment. Lime water and peroxide seem to do the work very well. The average duration of the cases that died in the institution was about 66 days. As to the cases that apparently recovered I can not say; they are still under observation and have not shown any symptoms since removal from the infirmary.

The 51 cases I referred to are not, by any means, all the cases that have occurred at the State Sanitarium. They are simply the cases that occurred among the colored females up to January, 1909, and do not include any white patients or colored males.

Dr. LAWRENCE LEE, Savannah (closing discussion): I have very little to add. Both my cases died so that any treatment I might mention would simply be unsuccessful treatment. Intestinal antiseptics seemed to do no good. Arsenic by the mouth did no good, nor did mixed treatment. Iron was also unavailing. Dobell's solution mouth wash seemed to give relief and 10 per cent. carbolized vaseline on the hands gave relief. I did not try atoxyl.

Dr. H. F. HARRIS, Atlanta (closing discussion): I have only to say that I agree with the speakers that none of these medicines do much good. I saw one case that was apparently benefited by arsenic given by the mouth. I know of a number of cases treated with hypodermic injections of atoxyl, but the patients died just the same.

CONSERVATIVE TREATMENT OF SCOLIOSIS BY PASSIVE AND ACTIVE CORRECTION.

BY THEODORE TOEPEL, M. D., ATLANTA.

The causes of scoliosis are manifold. Some of the most important and the most frequently met with are asymetry of the head, asymetry of the pelvis, short leg, and asymetry of the spine itself. Asymetry of the head is a factor not often taken into account. Ocular defects, causing improper balance of the head, are an obvious cause. Asymetry of the pelvis, as described by Barwell, is accounted as a not infrequent cause of asymetrical positions. The shortness of one leg is so common that it fails to attract the attention it deserves. Asymetry of the spine itself and unequal thickness of the vertebral bodies on the right side as contrasted with the left is a demonstrated condition.

All these defects of conformation must lead to some lateral deviation of the spine. It depends upon the individual whether these are taken care of by nature in some compensatory way, or whether they cause a deviation notable enough to be classed as deformities.

Aside from the structural defects causing asymetry and consequent lateral curvature are to be found the faulty postures resulting from attitude and occupation which must be accounted another important factor in producing lateral deviation. By favoring the growth of the spine on one side and retarding it on the other, there is a tendency to fix a lateral curve by establishing physical changes in the bones, ligaments and muscles. The twisted position in writing as generally practiced is more frequently than anything else a predisposing cause of many lateral curvatures. Playing the violin in the usual standing position, sitting in narrow school desks on one side, carrying school books in one hand or on one hip, pains on one side of trunk caused by furuncles, ab-

scesses, lumbago, contusion of chest wall, pleuritis and intestinal troubles, sports such as tennis, fencing, golfing, etc., and trades as that of the carpenter, etc., have no doubt contributed to bringing on lateral curvature. Other similar causes might be enumerated, but the aforesaid will suffice to look for these and related conditions in examination.

I claim that most of the causes of habitual scoliosis lie in the loss of equilibrium of the long muscles of the back (erecti spinæ). As in the above mentioned examples, lateral curvature develops because of under activity on one side of the muscles of the back, so also can we hope to correct the lateral curve by strengthening the muscles on the opposite side. This does not pertain to those cases alone where one-sided muscular activity is the cause, but it is also of primary importance to all other cases of scoliosis regardless of origin; because the strength of the erecti spinæ muscles on the convex side is the only latent power in the back which can correct the scoliotic spinal column. The muscular strength on the convex side is surpassed by that on the concave because of continued inactivity of long duration extending in some cases over a period of several years. Through the entire convex curve, the distance between the origin and the insertion of the erecti spinæ muscles is greater and the muscles having accustomed themselves to this position become too long; their contractile power is lost. The opposite is true of the muscles on the concave side, these muscles retaining the pathological scoliotic spinal column. This difference in the contractile power of these two sets of muscles may be easily proved by the lifting of weights. At first sight an operation to shorten the muscles on the convex side seems one to be considered, yet the flat muscles of the back themselves are not adapted to this operation and the necessary fixation of the trunk after the operation for a period from six to eight weeks undermines the muscular system of the youthful body to such an extent that, as a rule, this operation is not resorted to. Thus the only method to employ is that of localized gymnastic exercise by which muscular fibre is strengthened and

increased, thereby improving lost contractile power and the physiological function of the muscles, at the same time making the spine more flexible by over-correcting exercises and holding the spine in the improved position between treatments. The most important and sole purpose in the treatment of every case of scoliosis, no matter what the cause may be, is the strengthening of the muscles on the convex side by gymnastic exercises. *This therapy is sufficient in cases where no rigidity or structural deformity have developed* and fortunately in a large number of cases which come under the observation of the physician this stage of the disease has not developed. If rigidity and transformation of the vertebræ are present, termed by Lovett "structural scoliosis," it then becomes necessary to relieve the rigidity as far as possible which is caused by the contraction of the ligaments on the concave side. This last step, and most tedious, is to endeavor to transform the deformed vertebræ and ribs as much as possible into normally shaped bones. Very little hope of ultimate cure can be held out to a mature patient with bones fully developed, though operations on the ribs have been tried and abandoned.

It is a well established fact that weak trunk muscles are strengthened by gymnastic calisthenic exercises and the more complicated exercises on rings, horizontal and parallel bars, stall bar, orthopedic gymnastic plinth, etc. Drooping head, shoulders and otherwise faulty carriage in children due to weak muscles can be corrected in a general course of exercise at a gymnasium without the attention of a specialist and in a short time an erect and firm carriage is attained. Also patients afflicted with slight curvature are materially benefited by a general gymnastic course of exercise in so far as the back is strengthened and the inclination to speedy fatigue and the lateral drooping is overcome, but that a well defined case of scoliosis can be cured by a general gymnastic course of exercise is out of the question. If my assumption is correct, that is, if the muscular strength on the convex side is insufficient to maintain the erect position of the spinal

column, in other words, when a permanent lack of symmetry exists, it becomes evident that a general course of gymnastic exercises is insufficient. *A uniform developing of the left and right erecti spinae muscles will not alter the disproportion. A rational treatment aims at a one-sided development of the weaker muscles of the convex side.*

Sayre's suspension apparatus has been extensively used in connection with gymnastic exercise. During suspension most scoliotic cases show an encouraging improvement of the curve and great results were expected from this simple treatment. But suspension does not influence the muscles, it does not alter the already mentioned disproportion and its use is of such relatively short duration that it has no corrective effect on the scoliotic spinal column. It must be admitted, however, that suspension has a beneficial effect in loosening the shortened ligaments and muscles on the concave side.

The attempt has been made to render the temporary effect of the suspension permanent by applying the plaster jacket, orthopedic corset, etc., while the body was suspended by the head and the scoliotic condition corrected as far as possible. I now enter upon the most difficult and at the same time the most frequently disputed point in the treatment of scoliosis. Prominent orthopedic surgeons use the plaster jacket or orthopedic corset in the treatment of almost every case of scoliosis and other authorities, as for example the prominent Dr. Schulthess, a leading authority in the treatment of scoliosis, opposes most emphatically the plaster jacket or orthopedic corset. Dr. Lovett of Boston, an authority on orthopedic surgery, says the following of the Schulthess treatment: "The precision of the apparatus, its adaptation to anatomical needs, and the principle of securing correction and the development of desired muscles at the same time make the system sound and sufficient."

I readily see that by means of a close fitted plaster jacket, such as first employed by Wullstein, enclosing trunk, neck and head and with fenestrae cut out to give room for flat-

tened chest to expand on the side of concavity posteriorly, and of the convexity anteriorly, a corrected position is attained, but by its use the harm done to the muscles of the back, to internal organs and to general health of the patient is much greater than the good derived from it. In recent years many physicians have adopted the use of the adjustable orthopedic corset made of leather, celluloid or plaster, etc., in place of the non-adjustable plaster jacket on account of the unfavorable results above mentioned, though the corrective effect is not as permanent as that of the non-adjustable jacket, because the patient, left to adjust it himself, will not attain the corrective effect as accurately.

As before stated, in all scoliotic cases a disproportion exists between the muscles of the left and right sides of the back. The important point is, to strengthen those sets of muscles which will correct the scoliotic condition, thereby re-establishing the equilibrium. To attain this result the treatment is based upon principles which may be taken under the following heads: (a) The stretching of the shortened ligaments and muscles on the concave side by *active assistive* and *passive* exercises; (b) to strengthen and shorten the muscles and ligaments on the convex side by *active resistive* exercises; (c) how best to maintain the improved position.

KLAP'S CREEPING EXERCISE.

(a) The best way of stretching the shortened ligaments and muscles on the concave side is by means of active *assistive* and *passive* exercises with the necessary apparatus such as rings, pulley-weights, stall bars, Schmidt's suspension apparatus with exercise, plinth, Klap's creeping exercises, etc., relieving the rigidity of the spinal column. In order to obtain the best possible results from this mobilizing and stretching treatment it is necessary to produce a fixation of the spine in its corrected position at all times when the patient is not doing the correcting exercises. This is

Mobilizing Exercise.

best done by letting the patient sleep in an orthopedic bed (by Lange) where head and hips are fixed between pommels and the curves are over-corrected by means of belts. I have found this method satisfactory in every case in which the bed has been used. During the day, when not exercising, the patient must wear a support which holds the body and head in a corrected position. This is the *passive* corrective part of the treatment. Though a staunch believer in the value and efficiency of exercise in scoliosis, I have come to the conclusion that the improved spinal column, as the result of a medical gymnastic treatment, must be fixed in a supporting apparatus between treatments. This has been fully demonstrated to me during my recent visit to Eastern cities, Boston, New York, Philadelphia and Baltimore.

(b) The most efficient way to strengthen and shorten the muscles and ligaments on the convex side is by active resistive exercises with and without medical gymnastic apparatus. I prefer the active resistive exercises to the purely active exercises for this part of the treatment because the physician is better able, either by his own resistance or that of the patient's to strengthen and shorten the affected muscles in a more localized and direct manner. I have found it necessary to use the supporting apparatus during this part of the treatment also until the muscles are sufficiently strengthened to maintain the spinal column in a normal position.

Strengthening the Erecti Spinal Muscles.

(c) After removing the supports, the improved position must be always maintained while sitting, standing or lying. It is most readily maintained by sitting with the sacrum, loins, dorsum and shoulders well supported against the back of the chair, which should be molded to the normal shape of the spine. Standing at lessons or any other

occupation should be avoided when possible; when unavoidable the patient ought to stand on both feet with heels three to four inches apart. Standing on one foot is most injurious, as it at once throws the spine in a serpentine position. A short leg may be compensated by a thicker sole. As the time spent in sleep is about one-third to one-half during the growing period a proper bed posture is an important factor.

Prognosis.

With treatment (Lovett): Total scoliosis involving ligaments and muscles can be entirely cured in children and young adults. Scoliosis involving muscles, ligaments and bones in young children when in a moderate degree should be practically cured by long continued treatment (one year). If severe, it should be much improved, the prognosis in both classes being better in children with a long period of growth ahead than in adolescents. In older children and adolescents when the structural scoliosis is of moderate degree, it can be greatly improved by long continued treatment, but can not be wholly cured. Severe structural scoliosis under these conditions can be markedly improved.

When growth has been reached, only improvement and not complete cure is to be hoped for from this treatment or any other form. In adults with severe scoliosis the general condition of the patient may be greatly improved by an improved position of the spine. In late adult life support of the spine in the best obtainable position is the only outlook from treatment, again often attended by improvement of the general health.

DISCUSSION—DR. HOKE, ATLANTA.

Lateral curvature of the spine is a complex problem. There are so many points connected with it that have to be worked out separately and the procedures for working out these details are so different, that it is impossible to properly discuss this paper in a few minutes. I would like to have

time to take issue with all the main points in the paper except one, to-wit, that properly given exercises are the means of restoring weakened muscles, to strengthen weakened ligaments, to develop the sense of muscular co-ordination in the trunk, and to restore the postural equilibrium of the body *when there is no obstruction to it* from bone deformity in the spine and ribs. The essayist doesn't seem to recognize the meaning of this latter factor.

The essayist starts out with a wrong conception of the etiology of lateral curvature when he states that it is caused by over-contracture of the muscles on the concave side of the curve. This was one of the old ideas in regard to lateral curvature, and has long since been discarded. There are many reasons why this conception of lateral curvature is wrong, which I have not time to mention. It is very largely proved by the fact that it is absolutely impossible to base therapeutic measures entirely on this etiological idea. I desire, then, to agree with the essayist that there are some cases of lateral curvature in which properly given exercises are the only rational measure of treatment. But there are other cases in which properly given exercises with the use of light apparatus are the proper method of treatment. There are other cases that exercises and braces are contra-indicated until the bone deformity shall have been corrected as much as possible by the proper use of plaster jackets. I desire to say that the one who, in his own mind, groups all cases together whole-heartedly with one general principle of treatment, to the exclusion of all other methods, does not know enough about the problems of bad cases of lateral curvature to be trusted with the treatment of them.

For example, his conception of etiology and treatment would make his treatment absolutely worthless in caring for bad structural cases with extreme rotation of the vertebræ and ribs with a, consequently, misshapened thorax. Here, exercises alone do little good. Braces are worse than nothing, and there is only one rational method of treatment, which is as follows:

I have had the honor of pointing out, in the presence of this society, the connection between the respiration and the development of chest deformity in scoliosis, and in that article I demonstrated a method of plaster treatment, utilizing the power of respiratory expansion, which method has been most effective in correcting the deformity of the ribs and thorax. I am surprised that the essayist ignores this work in his paper.

It is impossible to correct to any degree a misshapen thorax and spine that have been greatly twisted unless my method is utilized, to-wit, by the application of a plaster-of-paris jacket applied with my apparatus, designed for this purpose, so that the points of pressure be applied at the point of respiratory force continuously during the application and wearing of the cast. Now, should that cast remain on the chest with no further modification, it would do harm, and that is the very reason why jackets in the past have done harm and why few men know how to use them; because they do not understand the mechanism of the chest and the mechanism of the respiration in scoliosis; formerly the plaster was left on all over the chest. After the plaster-of-paris has thoroughly hardened, it is necessary then to cut out over the depressed areas of the chest, not simply a hole two or three inches square, which has been done since time immemorial, but a large fenestrum, the shape of which must take into consideration the curve and the expansibility of the chest, permitting the chest to concentrate its expansive power in the proper degree to the areas where it is caved in and to restrict the respiration where the chest bulges out in the development of the deformity.

Now, this jacket cannot be applied without my apparatus and without a proper conception of the nature of respiratory power in the development of scoliosis, and a conception of how to apply, mechanically, a therapeutic force against a pathological force. That the essayist does not understand the cardinal principle, that bone deformity cannot be corrected by plaster except by continuous pressure, is shown by

the fact that he has patients sleep in a removable cast, a cumbersome old German method which nobody uses.

I regret very much indeed that the essayist has not illustrated by photographs or otherwise, some results which he has obtained by this method which he calls his own, but which has absolutely nothing new in it and which, I regret to say, is in my mind simply an inordinate mixture of many things without an expression of clear discrimination between the good and the bad of what has been used and discarded in the treatment of this very difficult problem.

Dr. Theodore Toepel, Atlanta (closing discussion): I will finish the last part of my paper in regard to prognosis, which will cover the points made by the gentleman (reading).

In my paper there is no intention to correct bones. The orthopedic world as a unit has concluded that the bones, the vertebral bodies, can not be corrected, especially in the adult. Therefore, we have adopted supporting apparatus and corrective exercises as the only means. Plaster jackets are of course to be used when the patient cannot be under the direction of the doctor himself. It is much easier to put on a plaster jacket than to have the patient coming in every day to take exercises under your directions. Originally muscular deformities are the cause of the trouble, and the cause must be treated first. The muscles are the primary cause and you must devote your time to the correction of these defects. When the plaster presses on the convex parts permanently it immobilizes the *weaker* muscles, the very ones that needed development, while the fenestrae over the concavities allow the stronger muscles more exercise.

I have been studying the action of muscles and ligaments for the last twenty-five years. In 1897 I presented my views on the subject of spinal curvature in the *Atlanta Journal Record*. At the Columbus meeting in 1903, I had the honor of reading a paper before the Association on the "Rational Treatment of Scoliosis and I have again presented the same method in my paper supplemented by the addi-

tion of body supports between treatments. Extreme methods, as advocated by theh gentleman who differs with me on this subject have, in the past been resorted to without spectacular results and the conservative treatment, that is, exercises with supports has finally been adopted as the only means of correction. This and similar methods regarded by the gentleman as cumbersome, have been advocated as the only proper ones by such men as: E. H. Bradford, Robert Soutter, R. W. Lovett, Boston; DeForrest Willard, J. K. Young, Philadelphia; V. P. Gibney, R. Whitman, New York; Henry O. Feiss, Cleveland; B. Roth, London; F. Calot, Paris; W. Schulthess, Zurich; Ros. Buccheri, Palermo; R. Alessandri, Rome; A. Hoffa, G. Joachimsthal, Berlin; F. Lange, Munich; S. Schlee, Braunschweig.

THE PRESENT STATUS OF CALMETTE'S CONJUNCTIVAL REACTION IN THE DIAGNOSIS OF TUBERCULOSIS.

BY F. PHINIZY CALHOUN, A. B., M. D., ATLANTA.

Since the time Calmette gave to the world this method of diagnosis tuberculosis hundreds of clinicians have used it, and the medical literature, both general and special, abounds in the reports of many thousand cases. Much has been written for and against its adoption. The test was intended for the clinician of general medicine, and the overwhelming number of reported cases are where the test was used in patients with pulmonary tuberculosis. It has, however, been used rather extensively by orthopedists, general surgeons and opthalmogists.

If it were possible to report any number of personal cases, it would merely be a recapitulation of what has been written many times before. One draws his own conclusions and frames his own ideas from experience; but it is the object of this paper to gather the facts from the many reports in literature, and really form the present status the true worth of the so-called Calmette's conjunctival test.

The preparation of a standard product, seems to offer the greatest drawback in obtaining the proper reaction. Many unfavorable, at times negative reactions are the results of improper tuberculin.

The formula originally described by Calmette, seems to meet with most favor, except from our German confreres, and the jealousy that usually exists between the French and Germans, easily explains in part this exception.

The formula in brief is as follows: One part of dried tuberculin, precipitated by alcohol, is dissolved in one hundred and ten parts of sterile water, or normal saline solu-

tion, and of this liquid one or two drops is placed into the conjunctival sac of the eye to be tested.

Preparations according to the above formula are marketed either in solution, powdered or tablet form. When the solid preparations are used, sterile water or normal saline should be the dilutients, and each preparation should be a fresh one. It is necessary to make a solution, for fragments of undissolved or suspended particles are sufficient to cause pseudo-reactions. It may be of interest to mention that the ordinary forms of tuberculin and Koch's old tuberculin are not to be used, since they contain glycerine and carbolic acid, which are irritating to the conjuctiva.

I find the French and German schools using different tuberculin, the former, according to the method of Calmette, the latter not remotely different from the preparation first described by Wolff-Eisner, viz.: "old tuberculin Hochst," but in smaller percentage, 2.5 to 4%.

I also find that Smithies[2] and Walker, in their exhaustive study of the subject, first used a preparation which contained fragments of the bacilli. This tuberculin, by the report of the manufacture to them, was made according to the formula of Calmette from virulent human and bovine cultures of the tubercle bacilli, grown on a 5% glycerine bouillon. Later they used a tablet variety in which no fragments of the bacilli were demonstrable, and the percentage of positive results with this preparation were not as great as with the first. They easily explained this difference by the fact that human cultures, which is essential, had not been used, and there was some fault in the preparation.

Observations by Damask[3], at the Pasteur Institute at Lille, France, show conclusively the French or Calmette's serum is two and one-half times more effective than the 1% solution of "old tuberculin Hochst."

Having no method of standardizing tuberculin, it is thus seen how difficult it is to review statistics, when the work is done under so great a variety of conditions. *The Reaction*: Here, too, seems to be no uniformity in what constitutes a

reaction. Calmette, in his original article, describes the reaction as a "a slight swelling and redness localized about the caruncle, the inner canthus and conjunctiva."

Baldwin's scheme,[5] employed by Wilson[6] and others, seems to offer the best method of standardizing a reaction, and for reference it is as follows: Negative—No difference in color when lower lids are pulled down and compared.

Doubtful—Slight difference with redness of caruncle.

* Distinct palpebral redness with secretion.

** Ocular and palpebral redness with secretion well marked.

*** Deep injection of entire conjunctiva, with edema of lids, photophobia and secretion.

The technique of applying the serum is simple, and what appears to be the best, is to use a sterile medicine dropper, and instil two drops of a fresh solution, prepared according to the method previously described, into the lower conjunctival sac of a healthy eye. The lower lid is held away from the ball, by gentle friction on the skin for a few moments, and pressure is made over the lachrymal sac to prevent the fluid from discharging itself immediately into the nose.

Care must be taken not to allow the eye to be rubbed or irritated in any way after the instillation.

The average time for a reaction is about four hours; many have noted reactions as early as two hours, and so-called delayed reactions have been described by many writers as occurring as late as twenty-four hours. If the eye is irritated or the sac deliberately emptied of its contents, pseudo or late reactions might develop.

The engorgement of the eye, and the inflammatory signs indicative of a reaction, usually subside in forty-eight to seventy-two hours. Complications, which do occasionally arise, last for various lengths of time, and they will be mentioned later in this paper.

Undoubtedly the intensity of the reaction does play an important relationship to the extent of the disease. Patients with small foci and whose resisting power is good, give

prompt and decided reactions. On the other hand, those who have become thoroughly toxic from the infection the reaction is slight or even negative.

Teichmann,[6] Wilson[5] and other well-known writers even regard the reaction as playing an important role in the prognosis of the disease. Some even claiming that a negative reaction in positively known tuberculosis indicates an unfavorable prognosis, death often occurring within ten days.

In determining a reaction, many factors must be borne in mind. One should base their results in (1) cases which are known to be tuberculous by clinical methods, (2) cases advanced or incipient, (3) doubtful cases, (4) cases in which individuals are apparently well, and a positive reaction in diseases other than clinical tuberculosis.

A postive reaction in the first class is obtained in from 50% condition or stage of the tuberculous patient was not known to 93%. This with variation undoubtedly means that the there was a positive reaction in 86% of 1,572 cases known to be tuberculous. 14,800 from the French, reported by Smithies[2] and Walker, showed positive evidence in 93%. The same authors quote from the Germans 1,554 cases, with a reaction in 86%. The comparison of the two schools well illustrates the remarks made previously concerning the preparations of the two forms of tuberculin.

In the group of doubtful and suspected cases, we naturally expect to find a much lower percentage. They are variously estimated from 15 to 55%. Calmette's review of 14,000 cases makes the remarkable statement that 61% of patients suspected of having tuberculosis gave positive reaction. The German reports show a corresponding lower percentage, that of 51%.

There are also apparently healthy individuals in which the conjunctival test has been applied. Here we find the French statistics showing a higher percentage of positive reactions than the German or Americans. Calmette again comes forward with the statement that 18% of his cases examined under this grouping, gave positive reactions. This is

in keeping with the percentage of tuberculous lesions found at autopsy in France. Are we to infer from the French statistics, notably those of Calmette that tuberculosis is more prevalent in France than Germany? 9% for the German investigators is a fair proportion.

Baldwin reports 28%, the highest of any American, although Engelbach[7] and Shankland are close at 25%. Their experiment with seventy students is interesting, and in part is as follows: 25 per cent. were positive; 74.5 per cent. were doubtful or negative. He also used the cutaneous reaction and in 79 students 51 per cent. were positive, 49 per cent. were doubtful or negative. Sixty-three students volunteered to take both tests (conjunctival and cutaneous) at the same time, and in 43 per cent. both reactions were negative or doubtful; 19 per cent. were positive. 33.3 per cent. the cutaneous was positive and the conjunctival was negative, and 4 per cent. the cutaneous was negative and the conjunctival was positive; 57 per cent. reached positively to one or both. Whether the cutaneous test had any effect upon the eye reaction, or vice versa, the authors did not mention. Such must be taken as a possibility, and many writers, as Hutchins,[8] Baldwin[9], Damask[3] and Wolff-Eisner[10], have demonstrated that patients receiving cutaneous injections for diagnostic or therapeutic means, the conjunctival reaction may be produced, heretofore being negative.

Many of the opponents to the conjunctival test have proven that diseases other than tuberculosis will give this reaction, and that the conjunctival test is not specific for tuberculosis. For that matter the same proof is advanced against all forms of tuberculin.

In typhoid fever particularly, the conjunctival reaction may be obtained, and it is especially true during the stage of convalescence. Citron[11] mentions that the reaction is due to an old tubercular lesion made active by a secondary change.

Cohn[12] produced positive reactions in 38 per cent. of his cases of typhoid, and Blume[13] has noticed it in lobar pneumonia and sepsis. Reactions have been noted in cases of leu-

kemia, scarlet fever, articular rheumatism, and are frequent in syphilis, leprosy and actinomycosis.

The interpretation of a reaction, whether it be positive or negative, is a matter of grave importance. When a reaction is prompt, it is generally conceded to be excellent proof that the patient is tuberculous. By physical examination, this test can usually be confirmed. The fact that there is no reaction in a suspected individual, by no means excludes him from being tuberculous. Faulty technique, poor tuberculin, etc., are among the many reactions why a negative reaction could be misleading.

It is sometimes necessary or advisable after a few days' time to make a second instillation into the eye, or even use a stronger solution. If this second instillation is negative, it is additional evidence that the patient is not tuberculous.

To quote Smithies and Walker, "instillations later into the first eye might be possible with the same solution as first used, but after five days, there is a strong probability that the second instillation may produce local hyper-sensitization and a reaction in people not active tuberculous, or a severe reaction in cases of tuberculous." In this report they mention more than 100 instillations in moderately severe and moribund cases, in which they had not seen a case fail to respond to a second instillation of a 1 per cent. solution in the same eye, when such instillation was made within three days.

Miliary tuberculosis, tubercular cases in a moribund condition, healed over or inactive processes, all can give negative reactions. Fortunately in most of these cases, except certain cases of miliary tuberculosis, the diagnosis is certain, and the conjunctival test could be of little value. The fact that there is much difficulty attending the recognition of miliary tuberculosis, the conjunctival test, unfortunately, has proved to be of little value. I have not seen any satisfactory explanation of this fact.

The contra-indications for this test, are those taken in part from Adam's[15] report. (1) They are affections of the eye in every form and stage, even after they had been healed up;

(2) young children (for obvious reasons, the test is unreliable and von Pirquet's test would be suggested); (3) a previous conjunctival reaction; (4) the intention of employing tuberculin in sub-cutaneous injections soon after the conjunctival reaction.

Having had under my care recently a severe form of superficial keratitis, with a mild iritis, resulting from the instillation of tuberculin, it was this, that caused my interest in determing the exact status of the conjunctival reaction, with especial reference to its diagnostic value in eye diseases, and also the eye complications that might follow.

Undoubtedly many eyes have been seriously impaired through carelessness and injudicious usage of this test, and with no great degree of credit to our American writers, these complications have not been generally known and reported, and we must look to our European confreres for these facts.

The complications that most frequently arise are a troublesome muco-purulent conjunctivitis, and often phlyctenulæ form.

Mackay[16] reports a case of a young woman, who had had no previous eye trouble, suffering from rheumatism and pulmonary phthisis, in which one drop of a 1 per cent. solution of Calmette's serum was used. The reaction was prompt, with increasing severity, resulting in chemosis and gumming of the lids. Ten weeks later, there was some redness and photophobia.

A case of tubercular keratitis appearing in a healthy eye from a 1 per cent. solution of tuberculin ten days after instillation is reported by Knapp.[18] The patient had a scrofulous superficial keratitis in the other eye, and the instillation was made in the healthy eye. Ramsey[17] mentions the bad results after using a 1 per cent. solution in a patent having an acute vascular keratitis in the right eye, with a history of a similar attack in the left eye years previous. There was a faint nebula in the left cornea, the eye in which the test was made, and in twenty-four hours there was a marked reaction.

which increased in severity until there was a vascular keratitis of the left eye.

McKee[19] reports two cases in previously healthy eyes; one of a membranous conjunctivitis, with no bacteriological findings, in a child four years old, suffering from osteo myelitis of the tibia; the other a phlyctenula keratitis in a case of tubercular hip, age 16.

Sedigmann[20] reports an interesting case of miliary nodules, resulting from a tuberculin instillation. Phlyctenules, he mentions, are frequent complications seen after the conjunctival reaction, and are often found in children after the subtaneous reaction of von Pirquet is used.

Butler,[21] a former advocate of the conjunctiva test, claiming it to be harmless in healthy eyes, has modified his views considerably, after having three severe reactions; they were a permanent corneal opacity, a phlyctenular keratitis and a conjunctivitis, resisting all treatment for two months. He now concludes that as the dangers are real, and since the reaction is by no means conclusive, it is hardly a justifiable method of diagnosis.

A severe case of irido choroiditis of the right eye and sclerosing keratitis in the left eye, in a man age 46, following the instillation of a 1 per cent. tuberculin solution, is reported by Trousseau.[22 23] He also mentions a marked extension of a tubercle of the conjunctiva immediately following the instillation of a 0.5 per cent. solution.

As the test was previously intended for the general clinician, some work of an experimental nature has been done in diseases of the eye.

Four months after Calmette announced his method of diagnosing tuberculosis by means of his serum, Stephenson[24], in the American Journal of Opthamology, reported several eye cases, in which positive reactions were obtained. Cases of phlyctenulæ of the cornea and conjunctiva in children, with no tuberculin lesion elsewhere, responded to the test used. Choroiditis, interstitial keratitis (non-luetic), episcleritis, tubercle of the cornea and iris, and chronic irido-

cylitis gave positive reactions. It should be mentioned that in some of these cases, giving reaction, subcutaneous injections of tuberculin were used, and later the serum applied to the eye. The present knowledge of such a procedure would greatly modify our belief that these reactions were true ones.

Brons,[25] in his usage of the test, concludes that the tuberculous nature of eye diseases can not be inferred from the course of the reaction. If it is severe, or the diseased parts participate, tuberculosis is probable. On the other hand, if the subcutaneous injection is followed by a positive general, or a local reaction, the ocular affection is certainly tuberculous, and for that reason, he prefers the subcutaneous, to the conjunctival test. He does not condemn the conjunctival reaction, but considers it, if carefully employed, as a valuable diagnostic means.

Waldsein's[26] experience in the clinic of Elsching at Prag, was most instructive, and illustrates the fact that instillations should not be made in diseased or inflamed eyes. Seven out of eight cases of eczematous kerato-conjunctivitis reacted positively with intense irritation, chemosis of the conjunctiva, with typical phlyctenules of the ocular conjunctiva. Old corneal maculæ became inflamed and formed ulcers. In a case of tuberculosis of the cornea with scleritis, the whole cornea after a second instillation became gray, and threatened to be destroyed, by suppuration. There were two cases of tuberculosis of the iris, and one of lupus of the conjunctiva, in which there were no reactions. From his experience he warns against the general employment of the test.

Nane and Swift[27] used the reaction in twenty-two cases; all had unilateral affections, and the healthy eye was employed, and there were fourteen positive reactions. It was their belief that the reaction did not necessarily indicate a tuberculous etiology of the eye disease, as tubercular foci might be in other parts of the body.

Steulp[28] confirms the diagnostic uncertainty of the reaction, and warns against it in opthalmology. Brunetiere,[29] quite to the contrary, believes the injurious effects imputed to the

Calmette procedure to be insignificant, and the case reported by Kalt, in which the intra-ocular lesions were aggravated by the use of tuberculin, he and Morax thought to be a coincidence.

Thompson,[30] of Glasgow, is skeptical, regarding the conjunctival reaction, and believes where one eye is healthy and the other diseased, especially with a keratitis of doubtful tubercular character, the application of the test to the apparently healthy eye is fraught with danger. The case reported by Knapp justifies this remark.

Derby's[31] recent report of 43 cases of phlyctenular disease in which there were 81 per cent. positive reactions (nine cases of uveitis, all reacting positively; three cases of interstitial keratitis, with two positive results, and one case of tuberculosis of the conjunctiva with positive reaction) were all in patients thought to be tubercular. His high percentage of positive reactions in the phlyctenular class, strongly points to the tubercular origin of the disease, and sixteen out of nineteen cases examined physically, showed evidences of tuberculosis.

As to the value of the conjunctival test, there is a diversity of opinion, and the leaders of the opposition are usually the opthalmologists, for into their hands fall the cases complicated, and they see the evil results of this method of diagnosis.

The following paragraphs from personal letters to the writer give the opinions of several well-known opthalmologists, in regard to its usage:

P. A. Callan regards "it as a dangerous remedy. In fact I will go a step further and say that tuberculin in any form as a diagnostic means, is unsafe and not trustworthy." C. S Bull says "it should not be resorted to, if the diagnosis can be made by physical signs and symptoms, and should not be employed if any disease of the eye is present." L. Webster Fox "has abandoned the procedure on account of the intense reaction of the conjunctiva, and also because the test did not prove that the individual in which the reaction was the most

pronounced, was suffering from tuberculosis." Geo. E. De-Schwienitz "does not doubt that the test is a valuable one, and would not hesitate to employ it in a normal eye, if it were thought necessary." Casey Wood says "that if the test be applied to a perfectly normal eye, if it be used by an oculist, who knows a normal eye when he sees it, and if the tuberculin be applied in a proper manner, there is little or no danger from its use." Frank Brawley has abandoned the conjunctival test in favor if von Pirquet's skin reaction "as being at least equally sensitive and absolutely safe." W. C. Posey believes "it is wise never to instill the tuberculin until after a thorough examination of both eyes."

The harmful results from this test have mainly followed, when unsuitable preparations were used, when patients were not kept under observation following the instillation of the tuberculin, and chiefly when the tuberculin was used in eyes that were not altogether normal. Calmette[32] reports 1,000 personal cases and 13,000 of other investigators, and in no case were there serious complications, where the test was properly applied and controlled.

It is easy to understand how complications can arise, when small superficial lesions of an eye are overloaded, by those inexperienced in ophthalmic practice, and the many unfavorable reports against the conjunctival reaction have occurred in the writings of those who have used the abundant material of our large clinics throughout the world, where ample opportunity for such lesions as keratitis, corneal ulcers, iritis and conjunctivals have escaped unnoticed.

The conjunctival test was never intended to supplant the older methods of diagnosis, viz.: a careful physical and laboratory examination, but merely an adjuvant. It is not the purpose of this paper to compare this test to the other methods of using tuberculin, though references to comparison have been frequently made. The conjunctival test has its many advantages in being inexpensive (frequently an important item), rapid in application and manifestation, con-

venient, and in the great majority of cases, where properly applied, is practically harmless.

As it has been pointed out, where examinations of immigrants, soldiers, a large number of cases in public institutions, etc., are to be made, the method appears to be of great worth.

The diagnostic value of the reaction has been affirmed by the majority of investigators as more or less certain evidence of tuberculosis.

Its application in ophthalmology, I believe the field to be very limited. A positive reaction could give misleading information. I should, however, use it, where I thought it would be of any possible value, provided the eye used was a healthy one. I thoroughly agree with Mannheim[33] in his conclusion, that "the conjunctival test has fulfilled all reasonable expectations. It is beset with apparent discrepancies which we are yet unable to explain. It opens up many new and interesting questions. It will never take the place of a careful physical examination. It requires caution in its application and interpretation. It should be used judiciously, so as not to bring it into discredit. It is important that we try to follow up cases, so that we may ultimately get an insight into the causes of the failures of the method."

In the hands of a competent ophthalmologist, I believe the conjunctival test for tuberculosis to be as safe as anything in medicine, but its indiscriminate usage is certainly dangerous, and a practice that should not be encouraged.

833 Candler Building.

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DISCUSSION.

Dr. E. E. THRASH, Atlanta: I feel that this mode of testing for tuberculosis is a milestone along the road of medical progress that we have passed. The eye is too important an organ and too susceptible to disease for us to tamper with it when it is in good condition and especially when there are other means equally as good for making the test. And we do possess means that are better. Nothing has ever been said against von Pirquet's method of skin reaction except that it is too delicate, but close observation and experience in the handling will soon enable one to get sufficiently familiar

with it to get better results than with the eye method. In my experience I have practically abandoned all other methods. I almost feel that this method of instilling tuberculin into the eye is criminal and should never be done.

Dr. L. M. Warfield, Savannah: I think we should not lose sight of the fact that these diagnostic means are only to be used when the other means fail us. No one should make a test with any of these tuberculins unless he has carefully made his physical examination, carefully gone into the history, and as a doubt still remaining in his mind that there may be tuberculosis. The indiscriminate use of the tuberculins is wrong. It is a two-edged sword. These methods should be used as a last resort to give an added link in the chain of evidence in making a difficult diagnosis. There is difficulty in the standardization of tuberculins and there is at present a commission working on that problem. I do not believe the Calmette method of precipitation has any advantage over the old tuberculin. The amount of the glycerine and carbolic acid that would be found in the old tuberculin, when you only use one or two drops much diluted in the eye, is so little as to be a negligible quantity. Tests I have made of weak solutions of carbolic acid and glycerine show that it has absolutely no effect on the conjunctiva. I believe with Dr. Thrash that the ocular reaction is to be condemned in general. I have never had any serious trouble with it, but have never felt that it was the right thing to do and I now use von Pirquet's method altogether.

Dr. F. P. Calhoun, Atlanta (closing): I do not wish it to be understood that I am an advocate of the Calmette reaction. The object of my paper was to formulate the present status of the matter. I really think the indiscriminate usage of this serum is to be condemned. If the general practitioner is to use it, the patient should be sent to an oculist for him to determine if the eye is normal, and only in a normal eye, as determined by a competent oculist, should the test be employed.

INGUINAL HERNIA OPERATED ON UNDER LOCAL ANÆSTHESIA.

BY A. G. LITTLE, M. D., VALDOSTA.

One of the principal obstacles to surgery is the patient's fear of the anæsthetic. That fear is not without foundation, as there is, with all anæsthetics, a certain per cent. of fatalities.

In order that an anæsthetic may be accepted by the profession it must embrace the following points:

(1) Safety to the life of the patient.

(2) Must insure a minimum amount of pain for the patient.

(3) Must permit of thorough work.

Cocaine in inguinal hernia meets these three requirements. There is practically no danger to the life of the patient, as the quantity used is much less than a lethal dose. The amount of pain experienced by the patient in the greater per cent. of cases is practically nil. The degree of anæsthesia is quite sufficient to do thorough work, and also to remedy any complication that may be found.

Also, the anatomy of this region is admirably suited for cocaine anæsthesia, as the principal structures met with in the operation are: The skin, superficial fat, apponeurosis of external oblique muscle, fiber of internal oblique muscle, iliohypogastric, ilio-inguinal, genitocrucal nerve, and cord with hernial sac and contents, and of all these structures but two are necessary to be cocainized, the skin and the three nerves. By injecting very superficially, the skin and the three nerves, or as many as can be found, you will have produced complete anæsthesia of the entire field of operation. In most cases all three nerves can not be found, but fortunately the most important, the ilio-guinal, is the most constant; so the cocainizing of this nerve renders the field

practically painless except the cord, which, if the genitocrucal fails to make its appearance, can be done by injecting the superficial structure of the cord, then the only part left for injection is the muscular fibers around the internal ring. So with all these structures thoroughly cocainized, you can do as satisfactory and thorough work as you can under general anæsthesia, without any of the unpleasant and objectionable after effects.

The solution I use is made by dissolving 2½ grains of muriate of cocaine in two ounces of normal salt solution, which makes practically a one-quarter of one per cent. solution. Of this solution I use about one-half or three-quarters of a grain, and in no case have I had any bad results that I could trace to the effect of the cocaine.

The following are histories of some cases that I used cocaine as the anæsthetic:

Case I.—Mr. M. (white). Age, twenty-seven. Height, 5 feet 8 inches. Weight, 130 pounds. General health, fair. Double indirect inguinal hernia. Right of six and left of two years' standing. The right I operated on first; the left about six weeks later.

The usual preparation before the operation and during operation were gone through with.

The line of incision was cocainized with a one-quarter of one per cent. solution, with same injected into the superficial fat directly under the incision. The incision through the skin and the superficial fat was made without any pain, except a slight twinge when a blood vessel, which is accompanied by a nerve filament, was cut. The apponeurosis of the external oblique was exposed and fibers separated from external ring to upper angle of incision. Two of the nerves were distinctly seen, into the sheath of which I injected a drop of the cocaine solution; I then retracted the internal oblique upward, exposing the cord and sac, the superficial structure of which I injected, also the margin of the internal ring; I then, without any pain to the patient, separated the sac from the cord, opening and reducing contents; I both

tied and cut off sac at internal ring. I then began the formation of a new canal for the cord by bringing the arched fiber of the internal oblique, and the conjoined tendon under the cord and suturing them by interrupted suture to Poupart's ligament, with medium-sized kangaroo tendon. Then I brought the flaps of the apponeurosis of the external oblique over the cord, suturing them with No. 1 10-day chromic catgut. The superficial fat and skin were brought together with interrupted suture of No. 1 ten-day chromic catgut.

I dressed the wound by applying a coating of styptic collodin, and then the usual dressing.

In this case I had a stitch abscess, which I opened and washed out. The abscess was superficial, consequently no damage was done to deep stitches.

Patient dismissed in four weeks with abscess healed and hernia cured.

CASE II.—The operation for the hernia on the left side was done about six weeks after first. The usual preparation before and during operation was gone through with.

The operation was as follows: Line of incision, which was about three inches long and the superficial fat, were cocainized; the incision through same was painless. Going through these structures I exposed the external oblique, the fibers of which I separated from external ring to upper angle of incision; reflecting these I brought to view the fiber of the internal oblique on the surface of which I found a nerve, which I injected. Then retracting the internal oblique I exposed the cord, sac and internal ring; cocainizing the superficial structure and fibers around the internal ring, I proceeded to separate the sac, which I found very short, from the cord. This I had no trouble in doing, as it gave the patient no pain. After separating and opening the sac, contents of which I found had been reduced, I tied and cut off sac. I then brought the fibers of the internal oblique and conjoined tendon under the cord and sutured them to Poupart's ligament, with interrupted stitches of medium-sized kangaroo tendon. I then brought flaps of apponeurosis of

external oblique over cord, suturing them with No. 1 ten-day chromic catgut. The superficial fat and skin I closed with interrupted sutures of No. 1 ten-day chromic catgut.

In this case I got healing by first intention and dismissed patient in three weeks, cured.

Case III.—Mr. W. (white). Age, 60 years. Height, 5 feet 6 inches. Weight, 145 pounds. Occupation, merchant

Right indirect inguinal hernia of about twenty years' standing. Truss worn but not sufficient at all times to keep hernia up. Right hydrocele for about five years. Two months before operation hydrocele tapped, removing about one and a half pints of straw-colored fluid. Afterwards twenty drops of pure carbolic acid injected into the hydrocele sac, but fluid partially returned.

Patient came to me with right hernia and right hydrocele.

Prepared field of operation in usual way.

I first tapped hydrocele, removing about one pint of fluid, and then injected about thirty drops of pure carbolic acid. The pain and shock experienced from this injection was more pronounced than I expected.

I proceeded to inject my line of incision and superficial fat, but found it necessary to give a hypodermic injection of one-quarter grain morphine to overcome shock produced by the injection of the carbolic acid. I waited until my hypodermic began to have effect and then proceeded to make incision through skin and superficial fat down to external oblique muscle. I separated fibers of external oblique from external ring to upper angle of incision. Looking up the nerves in field, I cocainized same. Retracting internal oblique upward I exposed cord, sac and contents, cocainizing the superficial structures of cord and sac, and muscular fibers around internal ring. I proceeded to separate sac from cord, which was done with very little difficulty and pain. Sac was opened, the contents, which was omentum, was reduced, and sac tied off at internal ring with No. 2 plain catgut, and clipped off. I then brought the fibers of the internal oblique

and the conjoined tendon under the cord and sutured them to Poupart's ligament by six interrupted sutures of medium-sized kangaroo tendon. I brought together the separated fibers of the external oblique and sutured them with No. 1 ten-day chromic catgut, interrupted sutures. The superficial fat and the skin I brought together by a continuous stitch of No. 1 plain catgut.

In dressing, I first applied coating of collodion, and then the sterile gauze dressing held in place by adhesive strap and spika bandage.

In this case I had some trouble at first from the pain from the injection of the carbolic acid into the hydrocele sac, but that I soon overcame by the hypodermic of morphine.

The after treatment was the same as in other cases.

Patient dismissed in three weeks. Cured.

CASE IV.—Mr. C. (white). Age, thirty. Height, 5 feet 10 inches. Weight, 215 pounds.

Hernia of twelve years' standing. Truss worn, but result not good.

The usual preparation of the field of operation gone through with.

Operation: Line of incision and superficial fat cocainized. No pain in going through skin and fat down to external oblique. I found that retracting sides of incision gave some pain, which was hard to overcome. I separated fibers of external oblique from external ring to upper angle of wound, retracting flaps. I found one nerve passing on outer border of internal oblique; this I cocainized, and retracting internal oblique I exposed cord with sac and contents. The cord I treated in usual way, by injecting the superficial structures and the tissues around the internal ring. I then separated sac from cord, giving very little pain; this I opened, finding contents reduced. I tied off at internal ring with No. 2 plain catgut and cut off. I then formed new canal for cord by bringing arched fibers of internal oblique, and the conjoined tendon under the cord and suturing them to Poupart's ligament by interrupted sutures of medium-sized kan-

garoo tendon; over the cord then I brought the separated fiber of the external oblique, bringing them together by interrupted sutures of No. 1 ten-day chromic catgut. I brought together the superficial fat and skin by buried continuous No. 1 plain catgut suture.

Dressing: I applied coating of collodion, then usual sterile gauze dressings.

In this case patient seemed to suffer pain when any retracting of incision was done.

Patient dismissed in three weeks. Cured.

I have learned the following from my experience:

That one-quarter of one per cent. solution is amply sufficient to produce complete local anæsthesia.

The amount I found necessary to use in any operation produced no bad effects.

Thin people are better subjects than fat ones.

Inspire in your patient confidence in your truthfulness and ability.

Tell them, when you know you are going to give them pain, as they will be expecting it then.

Arrange your patient on the table so they can not see anything that you are doing.

Don't ask for instruments, but have them near, where you can reach them.

Keep your patient's attention diverted as much as possible by talking to him.

That neither the number, size nor position of the three principal nerves are constant.

That the lower angle of the incision is the most sensitive part of the incision, and is the most liable to give trouble from hemorrhage.

That the handling of the peritoneum, omentum or intestines gives practically no pain.

The following, I think, are some very strong points in favor of local anæsthesia:

1. Avoids a general anæsthetic, which has its dangers to life.

2. There is practically no danger to the life of patient.
3. It is more inviting to patient.
4. No nausea after operation.
5. No pain after operations.
6. Full diet in at least twelve hours after operation.

LOCAL ANÆSTHESIA IN OPERATIONS FOR RADICAL CURE OF HERNIA.

BY W. L. COOKE, M. D., COLUMBUS.

In presenting to you the subject of operations under local anæsthesia for the radical cure of hernia, it is not my object to call your attention to any new discovery, but, if possible, to stir up some interest in a subject which, to my mind, is one of very great importance.

It is an undisputed fact that about one man out of every twenty is ruptured; that means, there are about forty or fifty thousand hernias in the State of Georgia.

The authorities in Germany have estimated that a man with an uncured hernia has his earning capacity reduced from twenty to fifty per cent. Now think what a saving it would in itself, is sufficient to deter an overwhelming majority from seeking relief by this method; as proven by the immense army who go through life wearing trusses—living monuments to one of the failures of our so-called modern surgery. Therefore, in order to overcome this seeming defeat and turn it into victory, surgery must seek other and more attractive means for producing anæsthesia in these cases.

And I contend that cocaine, when used properly, is the ideal anæsthetic for this work, as it has many advantages over general narcosis. And now we will consider for a few minutes some of these advantages.

In the first place, as to safety to the patient. It is a well-known fact that there is a certain amount of danger from any general narcosis, and this very slight danger is sufficient, in the majority of cases, to turn the tide away from the operation, in favor of the truss, disability and potential death.

Now I claim that cocaine, when properly used, is absolutely devoid of danger, as attested by the fact that Bodine of New York has operated on over six hundred cases of hernia

by this method, without a single accident. And what do we mean by the proper use of cocaine? It is simply using it in solutions of the proper strength, which is one-fifth of one per cent. for the skin and nerve trunks, and one-tenth of one per cent. or weaker, in the other tissues, and the administration about one-half hour before beginning the operation, of the physiological antidote—morphine in one-quarter to one-half grain doses, the amount being governed by the quantity of cocaine which it is expected to use.

I have injected almost 2 grains of cocaine, in the solutions mentioned, extending over a period of an hour and a half, without the slightest toxic symptoms; of course, this necessitates the use of about three-eighths of a grain of morphine.

Second, in regard to pain to the patient. I have never yet had a patient to complain of more pain than from the first stick of the hypodermic needle. On two occasions, I have had patients lie on the table and smoke cigars all through the operation. Twice have I resected portions of omentum, and once, almost the whole of it, in a strangulated hernia; once I sewed up a hole in the gut, and none of these patients complained of any pain whatever. I think this ought to be conclusive evidence of the fact that the operation is painless, notwithstanding declarations to the contrary by men who have never learned to use cocaine properly, but still cling to the old 4 per cent. to 10 per cent. solution.

Again, the patient does not dread the ordeal so much, as when a general anæsthetic is to be used. Several of my patients would never have consented to be operated upon, had it not been for the fact that it could be done without a general anæsthetic.

How often has every one of us had the experience, on telling a patient that an operation was necessary, had that patient reply, "Well, doctor, I don't mind the operation at all, but I do dread the thought of being put to sleep."

It is also far more comfortable to the patient, as it is absolutely useless to put him through the usual starving and purging process, which is so necessary before using general

anæsthesia—he can eat a full meal both before and after the operation, and smoke a cigar during the performance of it.

In using local anæsthesia, we avoid the distressing nausea and vomiting which is so common an occurrence after a general anæsthetic.

Another advantage is that, in my opinion, the wound heals better. I have not had any suppuration following in a single one of my cocaine herniotomies. This can be attributed mainly to two reasons. First, the very nature of the operation compels a more gentle handling of the tissues than with general anæsthesia, and we all know that traumatism predisposes to suppuration. Second, after an operation under a general anæsthetic all the vital forces are more or less engaged for the first 24 to 48 hours combating the combined shock of both anæsthetic and operation. Now, in doing the operation with cocaine there is no shock at all, therefore the organism can direct all its energies towards taking care of the few germs that always get into the wound at every operation.

Then there are cases demanding the operation, in whom a general anæsthetic would be positively contra-indicated, such as advanced cases of renal, cardiac or pulmonary trouble —and here the question of using a local anæsthetic arises to the importance of being almost imperative.

In strangulated hernia, I consider the operation under local anæsthesia to be, by far, the one of choice, and that here a general anæsthetic is positively contra-indicated. How often in these cases are we in doubt as to the viability of a piece of gut! In using local anæsthesia, as the patient is suffering no shock whatever, we can wait as long as necessary after releasing a piece of strangulated intestine, to see if the circulation will be restored; while, if general narcosis were being used, we would not be willing to subject the patient to any more risk by waiting, but would immediately resect a portion of gut, which, by giving it a little time, would, in all probability, have its vitality restored. Upon two occasions, I have waited at least one half hour after releasing a very black intestine, which, both times, was to all

appearances gangrenous, and applied gauze wrung out of hot salt solution, until the circulation was completely restored. In both of these cases I would not have waited at all, had the patients been under general anæsthesia, but would have resected the gut at once.

And now a word as to the limitations of the operation. In very many fat subjects, it is considered that the anæsthesia is not quite so perfect as in thinner ones. However, I have within the past week operated on two very fleshy patients and the anæsthetic effect was all that could be desired in both of these cases. I have never undertaken to operate on a child by this method, but would not hesitate to try it on one 9 or 10 years old, and of ordinary intelligence. I do not believe that a resection of the intestine offers any barrier whatever to the success of this method; however, I have not found it necessary to do this as yet. Upon one occasion, I sewed up a hole in the intestine without causing any pain whatever. In regard to the anæsthetic itself, cocaine hydrochlorate is the only one I have ever used. I have had some of the others, such as Beta Eucaine, quinine with urea, etc., very highly recommended, but have always gotten such uniformly good results from cocaine that I do not feel like changing to any of the others.

and it must be sterile; and the only way to insure sterility

A cocaine solution, in order to be effective, must be hot, cocaine solution will, upon standing a few hours, generate a fungus, which is capable of producing pus.

In order to insure solutions of the proper strength and sterility, I get my cocaine put up in hermetically sealed breakable glass tubes, each containing a sufficient quantity of sterilized cocaine and sodium chloride to make a one-fifth of one per cent. solution when added to one ounce of water. I always do this myself at the time of operation; the weaker solutions for the deep tissues being made during the operation by adding sterile water to the cocaine solution in the syringe.

And now we will consider briefly the technic of the opera-

tion itself. Inguinal hernia, being peculiarly adapted to this method of operating, on account of the anatomy of the parts involved, will be the variety referred to.

There are three nerves which have to be considered in doing this operation, and they are—named in the order of their importance—the inguinal branch of ilio-inguinal, hypogastric branch of ilio-hypogastric, and genital branch of genito-crural.

Corning discovered that, when a solution of cocaine was injected into the trunk of a sensory nerve, sensation was abolished over its entire area of distribution; or, in other words, the nerve was "blocked."

I once thought it was necessary to find and thus "block" all three of these nerves, but further experience taught me that it was imperative to inject only the most important, and the one most easily found—the inguinal branch of ilio-inguinal. This is the largest of the three and usually communicates freely with the others, therefore this trunk ought to be injected as high up as possible before giving off any of its branches. If, in the course of the dissection, the other nerves are found, I inject them also, but do not search for them. The patient should be placed on the table in the most comfortable position possible, usually with the hands clasped in front of chest. After the usual cleansing precautions, commence to inject the cocaine solution along the proposed line of incision, getting it into, but not under the skin, as the highly specialized endings of the sensory nerves are placed in the superficial layers of the skin. Cocainize the whole length of the incision and then introduce some of the solution of one-tenth of one per cent. strength into the subcutaneous tissue, being governed in the quantity by the amount of adipose tissue present. This should be pretty thoroughly done, as it is much easier to anæsthetize fat before than after making the incision. When this preliminary cocainization is very thoroughly done, it is often unnecessary to use any more of the solution except in the nerve trunks and around the external inguinal ring.

Commence the incision as high up as necessary but stop short of the vascular area, over the pubes, as when blood vessels are cut or pinched there will usually be some little pain. After reaching the apponeurosis of external oblique inject some of the solution under that structure and incise it in the direction of the fibers, when the ilio-inguinal nerve will usually be seen near the upper angle. Pick up this nerve on the point of the needle and inject it; after this, the pain for remainder of the operation is nil, except around the neck of sac, where some more of the solution may be injected.

At this point, the patient may be made to cough or strain, and thus show up the sac, if there be any difficulty in finding the latter. And this to my mind constitutes another advantage of this method. The operation is now completed in the usual way, except that I do not transplant the cord.

As illustrating some of the more important points of the foregoing, I decided to report the following two cases:

Case I.—Mrs. C., housewife, about 37 years of age. Had an irreducible femoral hernia on right side. She was of quite a nervous temperament, and was about four months pregnant. The hernia was causing her so much pain and distress that I decided to operate. The irreducible portion of the hernia was composed of omentum, of which I removed a piece about half the size of my hand, with absolutely no pain or shock. The operation was completed in the usual way with purse string sutures. The patient remained in bed two weeks and made an uneventful recovery, went on to term and was delivered of her baby, with no return of the hernia to date. It is usually considered that femoral hernia is more difficult by this method than inguinal, but in this case I had no trouble whatever.

Case II.—Mr. P., farmer, aged sixty, had a strangulated inguinal hernia of right side. I was called to see this patient about two weeks after Case No. 1 on October 6, 1907. I operated on him that night at his home about 10 miles in the country. The intestine was so black that, at first, I thought it was gangrenous; however, I decided to give it the benefit

of the doubt, and began to apply gauze wrung out of hot salt solution. After keeping this up for about half an hour, the circulation was sufficiently restored to warrant returning the gut to the cavity. This patient remained in bed two weeks, made a perfect recovery and has remained cured since.

In conclusion, let me urge upon the members of this society that in the future, they more frequently advise operations for the radical cure of hernia, and stop recommending trusses to their patients, and after the operation has been decided on, to operate with local anæsthesia.

INGUINAL HERNIA AND ITS SUCCESSFUL CURE BY OPERATION WITH LOCAL ANÆSTHESIA.

BY W. WHATLEY BATTEY, JR., M.D., AUGUSTA.

We live in an age of progress, and in order to keep abreast of the times in business, as well as in professional life, we must be able to accomplish more than our predecessors, with little or least danger, at a small cost, and satisfaction to all concerned. Perhaps nothing in the realm of surgical progress, has been a greater boon than the advent of local anæsthesia, in accomplishing difficult surgical operations painlessly. Of the many conditions in which cocaine can be employed, there are none so admirably suited for its use than the performance of the operation for the radical cure of inguinal hernia. It is to be borne in mind that I am not heralding this method with the hope of asking for originality, but merely to bring to the mind of those who are engaged in surgical work, the advantages of local anæsthesia in the execution of this procedure, being admirably supported by the classical work of Bodine, Cushing, Mitchel and others, and my own experience with thirty-two cases.

Now, to use this method with success, first of all one must have an exact knowledge of the inguinal rings, inguinal canal, and the nerves, cocainization of which allow the easy performance of the method. For this reason I will review briefly the important points in connection with the anatomy of the site:

The canal is merely an oblique slit or flat-sided passage. The external and internal rings are so blended intimately with the structures that pass through them, and so filled by them, that they are potential rings only. The external ring is formed by the divergence of two fasciculi, of external oblique apponeurosis, and two crura, superior attached to symphysis, and blending with suspensory ligament of penis:

inferior attached to pubic spine and blending with Poupart's ligament, and so with fascia lata. On the inferior pillar rests the cord, and so the weight of the testicle, or round ligament.

Boundaries of Canal: *Floor.*—Where cord rests on grooved upper margin of Poupart's ligament. The meeting of transversalis fascia with this ligament forms the floor.

(2) *Roof.*—The apposition of the muscles and the arched border of the internal oblique and transversalis.

(3) *Anterior Wall.*—Skin superficial fascia, external oblique all the way. Internal oblique, i. e., that part arising from Poupart's ligament for the outer third or so.

(4) *Posterior Wall.*—For whole extent transversalis fascia, extra peritoneal tissue and peritoneum.

The nerves concerned are the inguinal branch of the ilio-inguinal, genital branch of the genito-crural, hypogastric division of the ilio-hypogastric. These nerves have their origin from the first and second lumbar trunks. At times these three can be found, but the ilio-inguinal as a rule is always found, the same running from the iliac crest inwards and resting upon surface of internal oblique. If one observes carefully, small intercommunicating fibers can be seen, thus accounting for loss or partial loss of sensation in one trunk if its fellow is cocainized. One important point to be borne in mind relative to this nerve is that its end distribution is to the skin of the upper and inner part of the thigh, its fibers for this innervation passing through the external ring along with cord. How these are treated will be mentioned later.

The ilio-hypogastric may be absent, and in the course of the operation, if same is not seen, do not lose time in searching for it, but infiltrate around arched fibers of internal ring, and its fibers will be caught in area of infiltration.

The genital branch of genito-crural at Poupart's ligament turns around the inferior epigastric artery, and enters the canal, accompanying the spermatic cord in the male, and

the round ligament in the female. It is behind the hernial sac, and has little pain-bearing significance.

To enable one to better appreciate location of nerves, I have had this drawing made.

Preparation of Patient.—The patient is subjected to the same preparation as would be given for the general anæsthetic, though I never object to a light breakfast, the morning of the operation. As a preliminary measure to allay fear and restlessness, I give morph. sulph. one eighth gr. and whisky one-half ounce, one-half hour before operation, or, better, have same ready to be given as patient leaves room for operating room. Should there be any danger of toxic effects, the morphine and whisky will antidote same.

It is well to mention that one should study his patient and succeed in getting his entire confidence and belief in the feasibility of the method. Suggestion will go a long way, and if we observe Bodine in his clinic during the performance of a local anæsthesia hernia, one will note the patient indulging in jokes, with the same avidity as the operator.

Technic.—First of all, the surgeon must be calm and deliberate. Nervousness on the part of the surgeon tends to make a nervous and excitable patient.

The attitude of patient on table should be one of comfort, or as comfortable as one could be made. If the patient's arms are not so placed over chest as to be comfortable, we will have the misfortune of breaches in technic through the patient's ignorance, in his efforts to make himself comfortable.

The patient should be informed of the first step in the operation, i. e., infiltration of skin. He will then be prepared for the little prick of needle, and then his pain is no more. In introducing needle, always introduce it with bevel edge downward, and there is less danger of point emerging before infiltration is complete.

Infiltrate in such a manner as to produce a decided pallor in the infiltrated area, and continue same without removing needle, until the same has reached its hilt. Always be care-

ful to re-insert needle in pre-anæsthetized part, or else we have a repetition of pain of first puncture. The infiltration should stop at the supra-pubic skin fold in order to avoid the venous plexus of mons veneris. The use of gentle retraction will enable us to work without a long incision.

Now the deeper layers of the skin should be infiltrated by carrying needle to hilt, and depositing contents of syringe into tissues. These infiltrations should be about one inch apart. We are now ready to make incision down to aponeurosis of external oblique. Never ask assistant for a knife, for I have observed how fearful some patients are of being cut, but ask for a scalpel and sweep down to aponeurosis of external oblique without patient's knowledge. At this point the use of dissecting forceps and scissors in clearing up the aponeurosis is to be preferred to blunt dissection. The bleeding is at times troublesome, though, as a rule, the paucity of blood vessels at this side enable us to dispense with many clamps. The clamps should be applied with ease and gentleness. No rough sponging to locate bleeding points or roughness of any sort is allowed.

After having cleared external oblique, remember that fibers of ilio-inguinal pass out of external ring to supply thigh. Here infiltrate pillows of ring to include these fibers. Now beneath the proposed line of incision in the external oblique, infiltrate sparingly down to external ring, in order to include small nerve filaments, branches of larger nerves, that may be attached to under surface of external oblique. Instead of dividing external oblique at ring, first begin and cut from above downward and avoid ilio-inguinal fibers. It is not an absolute necessity to divide external ring in cases that are not complete, but in this event the aponeurosis must be divided higher up, in order to enable retraction of same. I believe, as does Mayo, that it is wise not to cut external ring if avoidable. The aponeurosis is now stripped back with care, and the nerves, the keynote to the situation, present themselves. As mentioned before, the ilio-inguinal is most constant and can be seen with distinctness. The needle is

carried into sheath of nerve and a few drops of solution deposited. The nerve stands out as a fibrous cord. If other nerves are seen, cocainize them.

The sac is now approached, and the chief aid in finding it will be the patient's help. He is told to cough and immediately the sac springs into view. It is the caught with forceps and with occasional "helps" from patient, it is dissected away from cord. Open sac and return the contents. Should there be adherent omentum or appendix, this can be amputated without additional infiltration, painlessly, as I have done in two cases. Meltzer has demonstrated that the introduction of cocaine in any part of the body will anæsthetize intestinal coats, provided there is no tympanites.

Before transfixing and tying neck of sac, the same should be infiltrated.

The question of dealing with the cord painlessly, in the attempt to transplant same, deserves consideration. A few drops of cocaine in the vas will prevent nausea that is sometimes experienced at this part of operation, due to drawing on cord.

Separate the cord with gentleness and care from its resting place on shelving border of Poupart's ligament and cocainize genital branch of genito-crural, if seen.

The remaining part of technic is carried out as is the ordinary Bassini method. The conjoined tendon is sutured to shelving process of Poupart's ligament, cord is transplanted and aponeurosis is closed by running suture. The skin incision can be closed one hour and a half after infiltration, without pain.

Could one conceive of a greater boon to mankind than this method! Bodine says: "The one dread of a patient is general anæsthesia, and it is well to be dreaded, for the mortality in inguinal hernia in good hands is the mortality of the anæsthetic." We could hardly think of the toxic effects of cocaine when less than one-half of a grain is used to complete the entire operation, and this amount is injected during one hour.

In some cases of strangulation it is really imperative. By its use we are enabled to watch and apply towels to a strangulated gut for an hour or more, and the patient suffers not, in the least, by the delay and resection is frequently rendered unnecessary.

The danger of post-operative vomiting is eliminated and the integrity of our structures remains unimpaired.

It is a known fact that primary union depends upon little traumatism, and the gentleness necessary in the performance of this operation enables tissues to heal by first intention.

When we perform this operation under general anæsthesia the nerves are of secondary consideration, but in cocaine surgery we respect them and the muscles innervated by them retain the same vitality as before the operation.

Solution.—The solution should be freshly prepared, one grain to one ounce of sterile water. The addition of a few drops of chloretone will keep solution indefinitely, but it is just as well to have a fresh solution.

Completeness of Operation.—This is a question that may be asked. The operation can be accomplished with the same degree of thoroughness that is displayed with general anæsthesia.

In regard to recurrences, I have seen two out of a personal experience with thirty-two cases. One in which I did not transplant cord, the recurrence occurring after a fit of sneezing, the other in a woman who was six months pregnant at time of operation. She had a recurrence after her pregnancy. Unfortunately, she had so much trouble, owing to the death of her husband, thus losing weight and strength, that I hardly think her case a test one. Bodine has had remarkably few recurrences in 500 cases, certainly not more than would have occurred under general anæsthesia.

I wish to add that in very fleshy subjects the possibility of some pain should always be stressed, but Bodine, in a recent article in *Annals of Surgery,* says that fat is no contra-indication, and in fatty subjects, suffering with heart or kidney lesions, local anæsthesia should be used. I have had some

pain in fatty subjects, but none have complained that it was severe enough to deter them in having a similar operation if it were necessary.

Strangulated Congenital Hernia In Infant 4 Months Of Age—Operation—Recovery.

J. W., age four months. Residence, Jones Street. Referred by Dr. W. W. Battey, Sr.

Family History.—Mother died of pulmonary tuberculosis two weeks after birth. Father living in sound health.

Past History.—Has been a bottle-fed baby. Has congenital umbilical and inguinal hernia.

Present History.—On 17th of December, 1908, the child became very fretful and grandmother was unable to quiet it. In removing diaper she noticed a tumor in groin that she could not reduce, as she had heretofore done. Slight vomiting at intervals. She at once called Dr. Battey, Sr., who saw the child at 4 p. m. I saw the child at 5 p. m. and advised immediate operation, notwithstanding age of infant. The child was hurried out to the hospital, and I operated at 8 p. m., assisted by Dr. Bernard and House Staff. Found a strangulated congenital inguinal hernia, constricted at internal ring. Bassini technic carried out. Child left hospital in two weeks, and wound healed by primary union, notwithstanding constant urinary discharge on dressings.

One point of interest in the case, is the fact that Dr. Battey, Sr., administered chloroform for one hour and reported hardly a variation in pulse beat.

This case I report to show that age should never be considered a contra-indication to operation, if there is absolute need for surgical intervention.

STRANGULATED INGUINAL HERNIA IN ADULT—RESECTION OF EIGHT INCHES OF SMALL INTESTINE—LATERAL ANASTOMOSIS—RECOVERY.

Willie Fulton, Union Point. Referred by Dr. H. C. Foster. Age 25 years. Family history negative.

Past History.—Has a congenital left inguinal hernia which has been reducible up to present time.

Present History.—Five days ago was taken with pain in groin. Hernia became irreducible. Nausea and vomiting. Abdomen tense and slightly distended. Large tumor mass in groin, painful upon palpation. Pulse frequent and small. Dr. Foster saw patient only on day that he sent him to hospital.

Immediate operation assisted by Dr. Bernard and House Staff. General anæstesia by Dr. Battey. General anæsthesia was used owing to fact that extensive resection was thought to be necessary. Upon opening sac, sero-sanguinous fluid, fæcal matter and gangrenous bowel were found, the bowel having sloughed through at one point. Sac was thoroughly irrigated with salt solution before traction was made on bowel to develop healthy bowel. Gangrenous bowel and mesentery divided and resected between clamps. Ends of bowel closed by ligating with catgut and inversion. Lateral anastomosis according to Mayo, using Roosevelt clamps. Bassini technic. Patient reacted well.

With exception of some pressure necrosis of skin, had no trouble and left hospital in three weeks.

DISCUSSION.

Dr. C. M. RAKESTRAW, Savannah: There is no more important procedure in the Bassini operation than the transplantation of the cord. Before that procedure was devised

there was a large percentage of recurrences. I am, therefore, a strong advocate of transplantation of the cord.

An important thing in cocaine surgery is to inject into the skin; if you try to inject cocaine under the skin you fail. One reason why there is no greater toxic effect from the cocaine in extensive operations where as much as four or five grains is used is that as soon as the cocaine is injected the incision is made and the drug allowed to escape. The smaller amount used, however, is much the safer plan. Morphia is the physiological antidote, but it is not necessary to use it in the majority of cases and it often causes considerable trouble. I did a case not very long ago in which there was a ruptured intestine. The patient was so ill that it was deemed advisable to operate under local anæsthesia. The intestines were distended with gas, abdomen tympanitic, but we put purse string sutures in without the least bit of pain to the patient.

Dr. W. A. Norton, Savannah: I think this subject of the use of cocaine in herniotomies is one of the most important subjects of modern surgery. I think and I hope that in a few years as many herniotomies will be done and done satisfactorily under cocaine anæsthesia as circumcisions are now done.

As to the injection of carbolic acid in hydrocele, I think the injection of carbolic acid in hydrocele is not a very satisfactory method. I have done it a number of times with very poor results. The operation for the radical cure of hydrocele is very simple and can be done in a very few minutes. An incision is made about two inches long over the sac, a rapid dissection of the sac can be made from the scrotal tissues, the sac can then be opened and emptied, everted over the testicle and one or two loose sutures taken in the everted sac, and the wound closed in a very few minutes. It seems to me in the majority of cases of hernia operation it would not be a difficult matter to find the nerves and inject a few drops of cocaine into them with satisfactory results.

Dr. W. L. Cooke, Columbus (closing): Dr. Battey called

attention to the matter of a nervous operator. I agree with him thoroughly, because a nervous, jerky surgeon will make a nervous, jerky patient.

As to morphia before the operation, I think it should always be used before using cocaine because in some cases there is hypersusceptibility to cocaine. I agree with Dr. Battey as to the use of the scissors and the tissue forceps instead of blunt dissection. I have been using 1/5 per cent. solution in the skin and I am going to try 1/10 per cent. I have never transplanted a cord and have had no reason to regret it. As to the amount of cocaine, I have never used as much as one grain, in the last case, an old man, I used less than one-half grain. I agree with Dr. Battey as to the preservation of the nerves; they must be preserved in order to prevent recurrence, because if destroyed there will necessarily be an atrophy of the muscles which the nerves supply. I have heard it stated by some authorities that a resection of the omentum produced quite an amount of shock. I have resected it in three cases; in one I removed almost the whole of it right up close to the transverse colon with absolutely no shock whatever.

Dr. W. W. BATTEY, Augusta (closing): One point I take issue upon is the transplantation of the cord. I believe to make the operation complete the cord should be transplanted in every case; otherwise there is apt to be recurrence. When we pull on the cord we get a degree of sickness, but if we inject a few drops into the vas, this is never complained of.

Another point as to treatment of the external ring; in doing hernias if we can avoid cutting the external ring we will find our results better. When we consider the anatomical position of the ring and how firm it makes the abdominal wall we can understand why we do not have recurrences when it is not cut.

In regard to the use of the solution I would say that in one case I saw Dr. Wyeth of New York use sterile water for the skin incision and go down to the external oblique without pain.

THE PATIENT AS A FACTOR IN THE TREATMENT OF DISEASE.

BY T. J. CHARLTON, M. D., SAVANNAH.

Those of us who practice Medicine to-day have a just right to take pride in the progress which the Science of Medicine has made in recent times.

At the beginning of the nineteenth century the practice of medicine, with few exceptions, was based on an empiricism as crude as that of the days of Hippocrates, whereas the closing decades of this century witnessed the opening of the most brilliant epoch in the history of medicine.

When at the Sorbonne on April 7th, 1864, Louis Pasteur before a committee of the French Academy of Science demonstrated that fermentation and putrefaction were caused by micro-organisms adhering to particles of dust floating in the air, a new epoch in medicine was created.

Inspired by the work of Pasteur Joseph Lister in the London *Lancet* of March 16th, 1867, published his first article on Antiseptic Surgery entitled, "On a New Method of Treating Compound Fractures, Abscess, &c."

In 1876 Richard Koch demonstrated the bacillus anthrasis as the cause of anthrax. He developed the bacillus in a culture media and with a pure culture thus obtained reproduced the disease. In 1882 Koch in like manner demonstrated the tubercle bacillus as the cause of tuberculosis.

In 1683 Anton van Leeuwenhoek, a Dutch naturalist, first recorded and pictured the discovery of bacteria. He worked with a home-made lens and saliva from the human mouth. From this time up to Koch's first studies on anthrax the bacteria had been studied chiefly by botanists.

Now with the work of Pasteur, Lister and Koch, with the progress in chemistry and the introduction of new and improved instruments of precision, bacteriology rapidly grew

into a science, becoming an integral and predominant part of the science of pathology. It has introduced a laboratory method and technic into both the study and diagnosis of disease. It has won victory upon victory in the conquest of disease until its influence overshadows all else in medicine, endangering even the clinical study of disease. To-day we are depending too much upon the finding of the pathological laboratory, too little on the clinical study of the patient. Let us pause and consider well before in our enthusiasm over the brilliancy of bacteriology we are led to the worship of false gods and are carried far afield. The mystery of pain is as profound almost as that of life itself, with which it is inseparably bound up; bacteriology will not solve it, there is yet greater work to be done. To do the little I can I desire to call your attention to certain errors into which our profession has fallen through the neglect of the patient in certain diseases, the results accruing therefrom and to suggest the remedy.

At Meissen, in Saxony, on the 10th of April, 1755, was born Samuel Christian Frederick Hahnemann, a man destined to profoundly influence the practice of medicine. He took his degree in medicine at Erlangen in 1779; was a student of medicine in Leipsic and Vienna. He settled in Leipsic in 1789.

Hahnemann was a man of remarkable courage and perseverance, fearless in what he considered to be the right. He meditated much on the unsatisfactory nature of the practice of medicine of his day. Then bloodletting was used indiscriminately in all stages of disease. Crude drugs in large doses, combinations of many drugs in a single prescription, nauseous emetics and drastic cathartics were in constant use, while mercury as a purgative was used in almost every case.

Under this method of treatment often when the disease failed to kill the patient, the treatment did. As Dean Swift has expressed it, the doctor reversed the process of nature: fed the patient by enema and cleaned him out with emetics.

Hahnemann, convinced that the conventional doses pro-

duced symptoms of unnecessary and dangerous violence, was thus led to the principle of minimum doses, the smallest dose that would cure the disease without injury to the patient. He advocated the study of the action of drugs in healthy individuals—in other words, the physiological action of drugs —and the results thus obtained to be applied to the treatment of disease. He condemned the use of many drugs in a single prescription and insisted that but a single drug be used at a time.

Thus far Hahnemann was far in advance of his time, and right. In his dogma of "Similia similibus curantur," his belief in the dynamic immaterial form or spiritual origin of disease, that the totality of the symptoms experienced by the patient constituted the disease, and in his contempt for pathology, he was weakest, his error great.

He encountered much opposition and in 1821 was forced to leave Leipsic, as he was not allowed to dispense his own medicine. He died at Paris July 2nd, 1843.

The results obtained by Hahnemann and his followers at least equalled those of his opponents and frequently surpassed them. His treatment of disease profoundly impressed and was far more agreeable to the patient, he disturbed and discredited the crude practice of his opponents and compelled their improvement. Bloodletting, formerly held in high esteem, lost its favor, was resorted to less frequently and in time almost ceased to be used. In recent years it has been coming more into favor in certain selected cases, yet how surprisingly little we find of it in the average textbook on medicine, while as to its technic there is practically nothing. Salivation from the excessive use of mercury, once so common that almost every other patient gave evidence of it, has gradually disappeared, while the profession felt the need of resorting to the excuse of undue exposure and the use of acids and acid foods to account for its appearance. Even unto our day is this idea common belief.

Hahnemann fought a good fight and won a great victory over empiricism and in behalf of his patient. He created a

new school of medicine which has forced the regular profession to greater endeavor and to improved methods. He encouraged the growth of scientific pharmacy and the art of making medicine palatable. He stood for the physiological study of the action of drugs, the only rational method of their use, and for the refinement of drugs, out of which our modern pharmacy has developed. For the great good he accomplished he is entitled to much honor and to rank among the masters of our art.

In Christian Science we have a movement which both in its origin and progress is a direct protest of the indifference and neglect on the part of our profession to the so-called functional neuroses of which hysteria and neurasthenia are the arch types. To the teaching that the functional neuroses are without organic lesions is due much of the neglect into which they have fallen. No class of cases are so objectionable to the busy physician, none so tax his energy or try his patience. When called to one of these cases it is the rule to prescribe the bromides, tonics, rest and relaxation, and when these fail, to advise a trip away from home, as much with the idea of getting rid of a troublesome patient as with any hope of improvement. While the functional neuroses may occur under all conditions of life, they are most frequent in those individuals who from one cause or another are deficient in the inhibitory or controlling power of the mind. Now while not confined to either sex they are more common in women than in men, occurring largely among unmarried women.

Our civilization has ever been unfair to woman. From infancy to womanhood her training is with a view to marriage as the chief aim and object in her life; that is, whenever she is trained at all. Almost never is she trained to become a self-reliant, independent, efficient worker in the broad field of human endeavor. The women who marry are as a rule those who represent the most normal development and who in marriage find opportunity to maintain their development. On the other hand, the unmarried women repre-

sent those who are the least normal in development and hence are condemned to occupy a secondary and dependent position in the family life. The drudgery and monotony of a narrow, restricted life is their usual portion and under these conditions they frequently become morbid and too introspective and thus fall easy victims to the functional neuroses.

Having in the past failed in our duty to woman as regards her development and training we owe it to her now to endeavor to fulfill it. With our present knowledge there is little excuse in allowing her to carry through life a deformed or undeveloped body with impaired functions, sluggish circulation and diminished mental power. In her education it is our duty to see that she is developed to a degree wherein she is able to occupy a position of responsibility and reward at least commensurate to her ability of attaining an independent and healthy mental growth.

Already the exacting demands of modern life and competition is forcing this position upon woman herself. Shall we not add our influence to this work for the glory of woman and in so doing diminish that army of neurotic women who are daily being added to the recruits of Christian Science?

Christian Science holds that the psychic is the only reality, that disease is unreal, non-existent and hence to be removed by psychic or mental suggestion. That this was the method used by Christ in curing disease, that it became lost at His death only to be revived by the teaching of Christian Science.

That man is of a dual nature, psychic and physical, is as old as the history of mankind. Psychic or mental suggestion, too, is of equal age, a constant, ever-present factor in life. It is that power which makes of the one man a leader in thought and action and of the ninety and nine but as a flock of sheep. It is the power which was given to the prophets of old, the martyr dying at the stake, the soldier at his post, to Zoroaster, Buddha, Confucius, Mohammed, to the Mahdi and his wild horde of fanatics. Always has it been a power, never has it failed of recognition.

Every physician who practices his calling makes daily use

of mental suggestion, though it must be confessed that the quack usually uses it to better advantage—at least to himself.

With the progress of Christian Science mental suggestion or psychic treatment has become a byword—we read of it in the daily paper, we hear it spoken of on the street corner.

Our indifferent success in the treatment of the functional neuroses has not been from our failure to appreciate the power of mental suggestion, but rather to our failure to appreciate the underlying physical disorder. We are obsessed with the teaching that the neuroses are without organic lesion. This is true of gross lesions easy of demonstration, but is it true of lesions of lesser degree which tend to recovery?

Health is that state or condition of being in which all the functioning of the various organs and tissues of the body are maintained in a condition of equilibrium. Let this equilibrium be disturbed, impairment of function follows and with it comes disease. Now between impaired function and disease there is but a line. Who shall draw this line? The neuroses that fail to recover always end in some disease complicating, while those that recover leave no evidence.

The attitude with which we face life and in the absence of direct infection with disease maintain our health equilibrium is mainly a question of temperament inherited and developed and of constitution inherited or acquired, yet how little do we consider temperament as a factor in disease, how seldom do we make mention of the classic division of temperament of the old authors, which is:

Sanguine—Emotions weak and change quickly.

Phlegmatic—Emotions weak and change slowly.

Melancholic—Emotions strong and change slowly.

Choleric—Emotions strong and change quickly.

Next to temperament as an influence on life comes constitution, meaning thereby vital force—which is dependent on the sizes and qualities of the various vital organs of which the body is composed.

Check the flow of blood to the brain, for example, by pressure on the jugular veins; unconsciousness quickly follows.

Increase the flow of blood to the brain by stimulating the heart's action and there immediately follows mental exhilaration, with increased mental energy, proportional to the rapidity, quality and quantity of the blood supply.

As Herbert Spencer has expressed it, the mental power is dependent on the blood supply and this varies according to the sizes and proportions of the sundry organs which unite in preparing blood from food, the organs which circulate it and the organs which purify it from waste products.

"Mind is not as deep as the brain only, but is, in a sense, as deep as the viscera." We are all familiar with how quickly the stagnant air of a closed room or the vitiated air of a crowded hall will produce headache, lassitude and malaise. How a pleasant emotion will increase the energy of will and the flow of spirits. How a disagreeable emotion will depress the spirits, lower the energy and interfere with the clearness of thought. The influence of digestion reacting through temperament is all important. Good digestion gives one the physical sense of well-being, inclines to optimism and clearness and vigor of thought, whereas even the minor disorders of digestion are accompanied by irritability of temper and sluggishness of mental power which inclines one to pessimism, rapid fatigue, easy discouragement and morbid worry, that canker sore which eats into the heart of man and brings in its train all the ills that flesh is heir to.

So far as we know, perfect physical health is always accompanied by sound mental power.

The functional neuroses have as their primal cause physical unfitness of various origin, which reacts on temperament, contracts environment, causes inefficiency and morbid worry and develops a train of nervous symptoms almost endless.

In treating the neuroses it is not enough to group the various symptoms and treat each patient according to the group in which his symptoms are to be found. No two cases are

just alike and that which differentiates them is personality. To each case you must add the force of your personality to fortify that of your paatient. Add to your work your enthusiasm, get away from dull routine. Be optimistic, vital, seek out the cause of the physical unfitness, of inefficiency, of morbid worry, remove it if you can and if not then fortify your patient to better bear it. Do this and you must succeed.

Of the Emmanuel movement I have only this to say: When first we read of man in history, the functions of priest and physician were combined in the priest. Early in the history of civilization these functions were disassociated, the priest and the physician each taking his special function. Let the priest keep to his creed, it requires all of his attention, while to the physician is given the body. Thus only will each work to the best advantage without confusion, one supplementing the other.

Osteopathy we owe to our neglect of that rather large group of symptoms which for lack of a better term we class under the name, rheumatism—I exclude acute rheumatic fever, which we now recognize as of acute infectious origin; also to our failure to properly utilize the mechanical aids, massage, hydrotherapy and electricity. Looking upon rheumatism as a chronic disease largely incurable, we give the iodides and salicylates and hold to them, and in our inability to cure the disease fail often to do all we can for the comfort of our patient. We instill our patient with our own doubts and often in despair he turns to quacks and other means of relief. Shall we blame him when the fault lies within us?

While the journals and newspapers are daily advertising some new health food, while a few men are advocating some special form of diet, we as a body are going ahead along the old line of feeding—the crude empiricism of ages. Chittenden writes on the Physiological Balance of Nutrition. Sir James Crichton-Browne contravents him in the Parsimony of Nutrition. Metchnikoff advocates a diet of sour milk,

claims that the long life of the parrot is due to his short, straight intestine, which protects him from the danger of auto-infection, which endangers man owing to the length of his large intestine.

In no department of medicine are we so backward as in that of dietetics. None offers more brilliant prospects.

Louis Pasteur, a chemist, opened the present epoch in medicine. This is prophetic, for from chemistry shall the most brilliant results of the future come to medicine.

Shall we by legislative enactment and other like methods of repression strive to throttle Christian Science, Osteopathy and all kindred movements, or shall we not recognize our own errors in the very growth of these bodies and profit thereby in our increased endeavor to overcome them?

The practice of medicine is to the physician. He holds a position in the world's esteem near to that of the priest and if he but do his work with the energy, intelligence and enthusiasm which is given to him, he must prevail. We of to-day owe our position to the thousands of valiant, enthusiastic men who throughout the centuries past have worked and striven for the glory of medicine. Many false prophets and doctrines have they met and vanquished. Shall we of to-day be less worthy? Shall we not do the work that is given us to do so that when our end comes those who take our place can say of each of us, "Well done, thou good and faithful servant"?

Discussion.

Dr. Martin Cooley, Savannah: I think this paper is a most timely one, for it is to-day a subject that is attracting the attention of the medical world. We have a great work to do along this line. Much of our so-called medical science is pure empiricism; we get our patients well by making them get themselves well. We must recognize the susceptibility to suggestion of every patient and take into consideration their personality if we are to get results.

Dr. C. M. Rakestraw, Savannah: One of the great

causes of our ignorance on this subject is that we do not go into the camps of these people and find out what they are doing and how they are doing it. It will pay any man to investigate the Emmanuel movement and Christian Science because these things do have a real scientific basis. The older investigators in medicine and surgery impressed us with their acute powers of observation. It is almost like reading a novel to read the history of one of their cases, because they tell us what the patient felt. That is the whole thing in a nutshell. Let us find out what our patients feel; what their ultimate destiny in life is; or what they think it to be.

Dr. T. J. CHARLTON, Savannah (closing): There is no man in this assembly who appreciates more than I do the science of medicine as a study of itself, but we must also appreciate the art of medicine, which is a study of the patient as affected by disease. We are dealing with personalities and that is where we have been weak and where the outsider has gotten in on us. I have never looked upon the quack as an injury to the practice of medicine. He serves to show us our weaknesses. He takes a little knowledge from our science and applies it to a large personal equation. He is generally a shrewd man and where he leads it is due to the error of the practitioner. He simply points out to us our own errors.

THE PREVENTION OF OPHTHALMIA NEONATORUM.

BY H. H. MARTIN, M. D., SAVANNAH.

Ophthalmia neonatorum is the sole cause of nearly one-half of all existing cases of blindness in the world to-day; and of all known infectious diseases is the most easily preventable.

There are in the civilized world six hundred thousand blind people: one-third to one-half of which were caused by ophthalmia neonatorium, an easily preventable disease. It is safe to assume therefore that two hundred thousand to three hundred thousand of these would not have been blind if effective prophylactic methods had been employed at the time of their birth. Just think of it, gentlemen, there are two hundred thousand blind people in the world to-day depending upon public or private charity for their daily bread who would have been capable of development into bread-earners instead of unproductive consumers. That is the economical point of view. Think of it again, from a humanitarian standpoint, let the full significance of these incontrovertible facts soak in. You know the cause of this disease as well as I do and I am sure you know equally well how to prevent it and I ask you what in God's name can any physician of the twentieth century offer as an excuse for not employing so simple and harmless a method of prophylaxis as the "Crede Method" in each and every case of childbirth? Simple because any one with ordinary intelligence can carry it out; harmless because a slight catarrhal conjunctivitis is the worst complication that could result from its use.

A physician in Savannah with a large obstetrical practice told me that he had never had a case of ophthalmia neonatorum in his practice and I am sure that no one individual sees a great number of these cases. Even in the large lying-

in establishments of Europe the percentage of ophthalmia neonatorum before the introduction of definite prophylactic measures amounted to but from one to twenty per cent. Notwithstanding this, ophthalmia neonatorum, when you consider the number of births that take place, belongs among the diseases of frequent occurrence and should never be lost sight of in the practice of obstetrics.

The majority of pregnant women have catarrh of the vagina with a mucus or purulent discharge. The great majority of these cases are benign in character, but a certain proportion of them are of a virulent type with which you are all familiar and which frequently turns up in the most unexpected places. In individual cases the distinction between benign and virulent is difficult or impossible, for which reason prophylaxis should be strictly observed in all cases.

In lying-in establishments where prophylactic measures can be rigidly enforced the percentage of cases of ophthalmia neonatorum has been reduced from twenty and thirty per cent. to less than one per cent. Crede had in the "Leipsic Lying-In Asylum," previous to the introduction of his method, an average of ten per cent. in the whole number of births; which after the introduction of his method was reduced at once to less than one per cent.

I believe that, excepting those cases in which the infection occurs before or after parturition, a careful application of Crede's method would eliminate purulent ophthalmia in the new-born.

I could give pages and pages of favorable reports from competent observers of the effectiveness of this method were it not already proven beyond peradventure.

Various substitutes for the silver nitrate solution have been brought forward and strongly advocated, but this salt in two per cent. solution has stood the test of time both as to effectiveness and freedom from any deleterious effect on any part of the eye.

Unfortunately the prophylaxis of ophthalmia neonatorum has not up to the present time been enforced by law, nor has

its immense bearing on the future of our new-born babies received just recognition from the obstetricians and the busy, overworked family doctor. It has merely been brought into use in a few of our lying-in establishments and in fewer still of the private practice of the physicians. And with the midwives not at all.

The object of this paper is to stimulate the interest of the individual members of this Association in this matter and to secure the endorsement and the active support of this Association, of a bill to be presented at the coming meeting of the State Legislature embodying the following points:

First—That the Crede method be made compulsory in all cases where a child is born whose mother at the time of confinement is supported in part or wholly by any city, town, or county in this State.

Second—That each and every midwife practicing in this State shall be required to obtain a license from the State Board of Health and register the same in the county where she is engaged in her practice.

Third—That the State Board of Health provide for the free distribution of the prophylactic in glass ampules to all midwives and physicians on application and that this Board shall also provide for the free distribution to midwives of instructive literature on this subject.

Fourth—That in the printing of birth certificates, an appropriate space shall be provided for a statement as to whether or not this method of prophylaxis has been employed and that all physicians, midwives and others certifying to a birth, shall be required to fill in this space.

The method itself is simple. Briefly, it is as follows: The child's eyes should under no circumstances be washed with the same water in which the body has been washed, nor touched with the same cloth or towel, but should on the contrary be washed with a cloth or pledget provided for that purpose only, in water provided for that purpose only, contained in a bowl provided for that purpose only, and then

one drop of a two per cent. silver nitrate solution should be dropped into each eye.

A concerted movement for the prevention of blindness is under way in this country under the direction of the American Medical Association and in order to secure the co-operation of the various State associations one obstetrician and one ophthalmologist have been appointed from each State. Dr. Hodgson and myself represent Georgia in this movement and we urge that this Association not only aid in securing the necessary legislation but that the President of each county society be instructed to appoint one man as a permanent committee in each county society, whose duty it shall be to keep constantly before the minds of our physicians the necessity for their active and vigorous co-operation in this movement. We ask also that the legislative committee of this Association backed by the State Board of Health be instructed to secure the passage of a bill embodying the points I have brought out in this paper.

Dr. Jas. B. Baird, Atlanta: I desire to protest against the proposition that the medical profession of this State shall seek or take instruction from the legislature in the treatment of any disease. As to the merits of this paper, I have nothing to say, and I certainly have no desire to be harsh in my criticism, but any appeal of this sort would mean sacrifice of our influence. We waste our opportunities occasionally for accomplishing beneficial reforms by attempting to secure unimportant and unwise legislation. Some of the suggestions in this paper are extremely objectionable. They not only should be promptly declined by the Association, but they should be vigorously resisted if it should be proposed to shape them into statutes.

The idea that the State legislature should pass an act compelling physicians to use the Crede method or any other method in all cases would be very obnoxious, I doubt not, to the vast majority, if not practically all physicians of the State.

Dr. T. J. Charlton, Savannah: We require vaccination,

why should we not require the use of the Crede method, which is so important a matter? I am opposed to any restrictions being placed upon the doctor. I think he stands for himself, but I do think we owe it to the people, as Dr. Martin says, to compel the use of this method in the institutions of the State, and I commend Dr. Martin's suggestions.

Dr. C. M. Rakestraw, Savannah: There can be no question but that gonorrheal ophthalmia is one of our gravest sociological problems.

Prince A. Morrow reports that from 10 to 30 per cent. of all cases of blindness are caused by this disease. But when we consider that this means only the reported cases, and that the disease is one of shame, often concealed, the percentage is probably much higher. Nor does this include those cases who partially recovering from the disease are left with corneal lesions, opacities, etc. These facts taken in connection with the curability of the disease in the large majority of instances certainly warrant us in taking any action to its eradication.

Dr. H. H. Martin, Savannah (closing): I must say I am surprised at Dr. Baird's position and I do not think it tenable.

My recommendation is that a bill be passed requiring the use of this method among the pauper element in public institutions and where a child is born whose mother at the time of birth is dependent in part or in whole upon any public institution in any city or county in the State. The other suggestion was that the general practitioner be required to state in his certificate whether or not he had used this method; not to compel the physician to use it. I do not retreat one iota from my position. I think we are criminally negligent when we refuse to do this.

REPORT OF A CASE OF DIPHTHERITIC OPHTHALMIA.

BY J. M. SMITH, M. D., VALDOSTA.

N. T., male. Age, 42. Occupation, farmer.

This patient came to my office on March 26 last. He gave the following history: Just one week prior to this time on arising he noticed a slight burning sensation in right eye, as if a foreign body was in it. On examination he found the eye considerably infected, lids slightly swollen. This was accompanied by pain, photophobia and lachrymation, which rapidly grew worse. The secretion at this time was free from pus. He consulted his family physician, who prescribed an antiseptic wash. The eye continued to grow worse and in about 48 hours from the beginning of the attack he noticed a white patch forming over the cornea. The other eye now became infected, beginning as did the first. He was not yet impressed with the seriousness of his condition, thinking he had an aggravated case of ordinary "sore eyes" which would yield to treatment in the usual length of time. On his next visit to his physician he referred him to me. He had, from the beginning, and was now, suffering intense pain. The secretion was purulent in character but not profuse. The upper lids, instead of being hard, as he had described them, were rather flabby and easy of manipulation. The conjunctiva was highly infected and showed evidence of a violent, as well as an unusual character of, inflammation. Covering about two-thirds of cornea of right eye was a grayish patch, which afterwards proved to be a membrane, and which appeared to be set in rather than lying on the cornea. This same condition prevailed in the left eye except the area much smaller, having pupillary space uninvolved. It occurred to me that it was a gonorrhœal infection, yet it lacked its essential characteristics, the tense

swelling of the lids, the marked chemosis and copious purulent discharge. He was immediately put to bed and an examination of the secretion by Dr. S. T. Harris, of Valdosta, showed presence of Klebs-Loeffler baccillus. Temperature being 100 Fahrenheit. Ten thousand (10,000) units of antitoxin was administered. Warm boric irrigations, argyral, atropine and hot applications ordered. Dr. Harris sent a culture to State Board of Health, who confirmed the diagnosis. Within twenty-four hours the membrane on each cornea had peeled off, stripping the cornea of its epithelium, leaving a raw surface, which is now undergoing repairs. So rapid was the onset of this case and so disastrous the result to the cornea, that it may properly be termed a fulminating type of the disease. Vision in left eye will be good. An iridectomy in right will give him some vision. I am of the opinion that the antitoxin had little influence in this case, as I am quite sure resolution had already set in, but owing to the liability of new areas of infection it's a procedure that should always be adopted. The literature on the subject which I have at my command does not mention the existence of a membrane on the cornea as occurred in this case, but does state that ulceration of the cornea occurs, "due to the dense infiltration of the substance of the conjunctiva, hence interference with its nutrition." It is true that I saw this case too late to determine positively whether or not there was a conjunctival membrane present, but were this true there could not have been within the space of 48 hours from the beginning of the attack enough interference with the corneal nutrition to produce an ulcer covering two-thirds of the corneal surface. To me this case was of great interest on account of its infrequency and the liability of a mistaken diagnosis, especially in the early stages. Fortunately it is very uncommon in this country. It has been known to occur in epidemic form in Berlin. It rarely occurs in England or France. During an eighteen months' house service in one of the large New York eye and ear hospitals I never saw a case. When this infection is concomitant with nasal

or faucial diphtheria, the diagnosis has practically been made for us, for our attention has already been directed toward this type of infection. We can not rely on systemic disturbances to aid us in the diagnosis; although the depression of the vital forces is sometimes very marked. Yet you would not likely find it in an adult. In order, then, that we may deal intelligently with these conditions as in all other purulent conditions of the eye, a microscopical examination should invariably be made. This I think is the one practical lesson to be learned from this case. It requires little time (not a culture, of course), but if by cover slip preparation we find a virulent type of infection, we can then make culture in order to be more accurate. In the management of these cases, the same precautions as to infection should be carried out as in faucial diphtheria. If only one eye is infected the other should be thoroughly protected. As to treatment, antitoxin of course should be used as vigorously as in the faucial type—whether the systemic disturbances warranted it or not. Locally, warm boric irrigations and atropine. In the early stages cold applications; later, however, hot applications, especially if any evidence of corneal involvement is present. I believe if we make an early diagnosis and push our antitoxin, the results will be as brilliant as when the infection occurs elsewhere.

Discussion.

Dr. F. P. Calhoun, Atlanta: Isolated and sporadic cases of this disease are so rare that the report of such a case is always of interest. I think Dr. Smith is to be congratulated on his management of the case and the result obtained.

Dr. J. W. Duncan, Atlanta: I had a case of a little girl six or seven years ago, a very well marked case of diphtheria. One morning she made a complaint about the eye and during that day the aqueous humor was discharged as a result of ulceration in less than twelve hours. Loss of the eye occurred, although the patient made a good recovery.

SOME CASES OF MOUTH AND TONGUE DISEASE.

BY M. B. HUTCHINS, M. D., ATLANTA.

I have selected from a number of cases in my records those reported below as typifying the different lesions encountered in the mouth and on the tongue. Practically every growth in these regions is the result of trauma or chronic irritation, excepting, of course, tuberculosis and syphilis.

The majority of the lesions that I have seen have not been as dangerous or malignant as at first examination was feared. A carcinoma or sarcoma of this region is rarely seen in time to effect a cure, but the innocent growths could persist for years with no trouble other than the inconvenience of their presence and the possibility of malignant change. Diseased teeth and infective processes play a prominent part in the production of both innocent and malignant growths of the gums. The most common cause of new, innocent formations on and adjacent to the gums is badly fitting false teeth, persistently worn. Chewing, or smoking, tobacco has a large influence in producing malignant mouth and tongue lesions, either indirectly as through the production of leukoplakia, or directly as by means of erosions. Syphilis is responsible for some cases of leukoplakia, and many cases of cancer of the tongue follow lesions of this disease, particularly the gummata.

Underlying, however, all exciting causes is a tendency to cancer or the absence of it, rendering one case the subject of rapidly developing malignance, while another seems to show immunity despite all sorts of continuous irritation and trauma. Case IV illustrates the former and Case II the latter. What this, probably, chemical state of the tissues is, either favoring or repelling malignant development, we have yet to learn.

CASE I.—W. D., Jr., age 11. Giant-celled sarcoma of

alveola. Growth developed four months before examination, opposite root of second, right, lower, permanent molar, this tooth tilted inward; the third apparently sound at root but rest mostly a filling. Lesion growing from outer surface of gum and sockets of second and third molars as well as between. Measurements ¾ inch long, ½ inch wide. A rounded, red, firm, inelastic tumor. Operation at Presbyterian Hospital, general anæsthesia. Growth cut away, base treated with actual cautery. The two teeth removed, their roots sound. The cautery was again thoroughly used.

Three weeks later re-growth in site of second molar. One per cent. solution of cocaine was injected. Rongeur forceps and curette employed to remove as much as possible of the lesion and its base—then charred with the cautery, after several applications of 10 per cent. solution of cocaine.

At this time Dr. Claude A. Smith reported the microscopic diagnosis of giant-celled sarcoma. Ten days later the area was healed smoothly. At the end of six months, when next seen, the gum showed no evidence of disease or treatment, having the appearance of any other alveola from which the teeth had been long absent. There has been no report of further trouble.

Case II.—Mrs. C. Age 38. Fibrous growths lip, gum, cheek. All upper teeth, front, and left upper and lower removed 12 years ago. Got a badly fitting upper plate of teeth, which irritated from the beginning. A small growth, at times raw and sensitive, began in a short time, about middle left upper buccal-alveolar junction. Persistence in use of the plate, with extension and increase of growths until time of examination. Beginning about mid-line of upper lip and occupying practically its whole inner surface, down into alveolar junction, extending irregularly along left buccal region chiefly opposite upper gum, dipping into junction of buccal mocus membrane and upper alveola (original point of origin), then spreading out irregularly like a group of mountains with an extra dome at and enfolding end of gum.

A group of small growths occupied the intermaxillary angle. The lip growth was ½ to ¾ inches in thickness, the rest irregular and in parts one inch wide. Lesions tough, fibrous, mucous membrane rough and white.

Operation at Tabernacle Infirmary. Chloroform through nasal tube. Ligature put through end of tongue, to control, and mouth held open with Whitehead gag. A nurse kept firm pressure on left facial artery and vein, reducing bleeding to minimum, though two small branches were ligated, in wound, prior to removal of pressure.

The dissection was done entirely within the mouth, no external incision, scissors used for most of the work, beginning with the lip growth. In the posterior buccal and intermaxillary regions the slight bleeding and poor light necessitated dissection rather piece-meal, by palpation instead of sight. Throat was kept packed with gauze to prevent trouble from blood. Owing to tension the intermaxillary wound could not be closed, but the rest in cheek, gum and lip was sutured with one chromic catgut stitch from behind forward ending at termination of lip wound. Healing progressed rapidly and the catgut was drawn out, undissolved, in a few days. Nine days later some remnant, or renewal, of growth in labio-alveolar junction cut away, under cocaine, and raw surface cauterized with acid nitrate of mercury. Other little points, as alveolar-buccal and intermaxillary, shrank away and patient was dismissed free of trouble and with no disfigurement. The absorption of last remnants of growth showed effect of removal of irritation and absence of malignance.

Case III.—Mrs. R. Age 42. Fibro-chondro-osteoma alveolæ inferior.

Severely salivated, with loss of left lower incisor about six years ago. Growth soon followed, was first removed a year later and again two years ago, leaving the other incisor *in situ*. Later, all teeth removed. Wore an upper plate until present time, its teeth pressing down and irritating re-growth. At examination there projected from former site

of left incisor a rounded, reddish-white, firm tumor, slightly broken at base.

A one per cent. cocaine solution in 1/5000 adrenalin chlorid was injected a little way in. Needle encountered cartilage and then broke in bone. Ultimate result the removal of a growth the size of a large pecan, the top layer fibrous, next cartilage and basal part new bone. Lesion terminated in some irregular spiculæ of bone that penetrated cancellous structure of inferior alveolar process. Rongeur forceps, bone shears and heavy scissors used. This patient went to her home in the country and I have had no further report.

Case IV.—Mr. T. Age 49. Carcinoma left buccal region and ends of lips. Metastasis to submaxillary glands. Teeth, where present, badly decayed, cheeks thick, rendering injury easy. Three rough, "tartar" covered left upper, posterior molars and first molar root only, and one fourth lower present. Bit inner surface of cheek about four months before examination, probably often injured afterwards. Within a month the growth developed—gradually increasing in size. Does not know when glandular disease began. Upon inspection a tumor the size of a "buck eye" was found, involving full thickness of anterior cheek, oral angle and slightly invading ends of lips. Skin adherent to middle. Posterior part of growth encompassed the parotid duct, the upper side pressed against molars. At junction with upper gum the tissues were eroded, seemingly traumatic, a furrow. At posterior end of submaxillary salivary gland a walnut-sized diseased lymph gland. No others found. Prognosis not favorable. Operation at Presbyterian Hospital. Ether, drop method. Two inches long incision over submaxillary gland. The gland dissected free, including posterior end of salivary gland and a small adjacent lymph node. Larger gland, friable and purulent, punctured by hook forceps permitting slight extrusion into the clean wound. "Harrington's solution" used to cleanse. Cavity closed from bottom up with buried catgut stitches. Skin wound closed with catgut.

Beginning well to right of facial tumor on lips a through and through dissection was made, widely away from borders, including whole cheek tissues and back to edge of masseter muscle, down to base of upper gum and the mucous membrane here, with the buccal-alveolar erosion included in the section, terminating dissection at free edge of gum. A ½ inch long stump of the parotid duct remained, lying on anterior part of masseter muscle. In closing the wound care was taken to leave this end free to empty in mouth and form its own opening—through granulation tissue.

The three molars and stump of first removed, jagged bone spines between trimmed smooth with Rongeur forceps. Last remaining old lower fourth molar had caused some irritation and it was also removed. Mucous membrane and tissues above, except the skin, carefully united. New oral angle formed with lip parts of wound. Finally the skin accurately united, no drainage. Circulation but little decreased by tension. For some time there was salivary leakage from points in both wounds, but this soon ceased under applications of tinc. of iodine to granulating points and my air-tight adhesive plaster dressings. Line of union good, slight scars.

Dr. J. E. Paulin confirmed diagnosis microscopically. Patient was warned of possible future need of operation in triangles of neck. After leaving hospital, the operated area and whole anterior left side of neck given 12 X-ray treatments, 10 to 15 minutes each, resulting in a superficial "sunburn" and temporary loss of beard. No evidence of further trouble three months later when last seen.

Case V.—Child of 12, is referred to in order to show effectiveness of treatment of a recurrent ranula of right side. Probing having failed to keep duct open, or to demonstrate a calculus, a 10 per cent. solution of cocaine was applied to surface of the ½ walnut-sized cyst. A buttonhole was made in the wall of cyst with one cut of scissors. There was never a recurrence.

Case VI.—Mr. W. Aged about 40. Early epithelioma of right side of tongue, the result of chronic erosions by bad

teeth. Lesion a hard, rounded disc the diameter of a dime but thicker. Alternatives, excision or cautery. Under chloroform, the lesion was thoroughly destroyed with the actual cautery. Patient remains well now, over six years. This case recalls that of Mr. C., aged 24. For some months leukoplakia of left side of tongue, due to strong tobacco kept in contact, and jagged teeth. Leukoplakia cleared up on ceasing use of tobacco and the frequent use of 10 per cent. chromic acid solution, but an ulcer about middle of left side of tongue, with hard, raised edges, persisted. This, an area about the size of a lima bean, was thoroughly destroyed with actual cautery, under cocaine anæsthesia. Remained well until death of patient from typhoid 12 years later.

Clinically these cases were typical epithelioma of the tongue, but the absence of microscopic diagnosis is regretted because of their cure, and hence a doubt, perhaps, of diagnosis.

Case VII.—Mr. D. Age 32. Gumma of dorsum of tongue, right side. Syphilis ten years before. Two years' treatment. No other symptoms until occurrence of tongue lesion two or three weeks before examination. First a superficial erosion, then the gumma discovered. Situated in anterior part, right half dorsum of tongue, set in beneath papillary layer, slightly raised, round and the size of a large peanut kernel. Ordered sat. sol. potas. iodid. 10 drops t. i. d. increasing three a day. On third day a small hole formed through top of lesion and a little gelatinous material was exposed. At end of nine days began hg. protoiod. 1/5 gr. t. i. d. Lesion well within two weeks from beginning the K. I.

Case VIII.—Mr. B. Age 44. Tuberculosis of tongue. Six months before examination found "a small lump" in mid-dorsum of tongue anteriorly. "Broke it with his teeth." Lesion on tip of tongue only two weeks. The dorsal lesion formed an area about the size of a five cent piece, base and walls almost cartilaginous hard. Base 1/8 to 1/10 inch thick. All but a rim consisted of a depression with smooth,

flat floor in muscular tissues, edges scalloped, firm scallops composed of usual infiltration and between and in them many miliary tubercles.

Drs. H. F. Harris and C. R. Andrews confirmed diagnosis microscopically.

On tip of tongue was a superficial oval lesion, transversely, soft, edges red with fine red line within and grayish floor—a coagulum. Both lesions very sensitive. There was no positive diagnosis of general tuberculosis, though there were some indefinite symptoms.

The lesions were treated many times with the actual cautery and later with the acid nitrate of mercury and swabbing over whole areas with 95 per cent. carbolic acid, but remained uncured at end of three months. The patient died within a year, symptoms obscure but chiefly referred to the bladder, as reported by his physician later.

Discussion.

Dr. F. W. McRae, Atlanta: I have had the opportunity of observing a good many of these cases which the doctor has reported, as well as many others. I had long ago learned from experience that my surgical treatment of these growths in the mouth was not satisfactory. I had confidence in Dr. Hutchins as a diagnostician and have especially admired his persistence and patience in dealing with small things and for that reason have been referring these cases to him and I have been delighted with the results. It brings to mind some of the points so well presented to us last June by Crile. As to the matter of irritation there is no question but that it is one of the chief developmental causes of carcinoma. This irritation must be removed and when it has been removed then if you remove completely the growth you cure the condition. The doctor who makes an early diagnosis and treats the primary cause gets the results. Crile made two other points in his paper worthy of attention: complete section—a dissection which takes away everything around the

growth; and, having done these things, the application of the X-ray is in order. I think the success Dr. Hutchins has had with these cases depends first on his skill as a diagnostician, second on his persistent, careful treatment with chemical cauterants and third the following radical surgical operations up with the application of the X-ray.

THE SIGNIFICANCE OF UTERINE HEMORRHAGE.

BY GEO. A. WILCOX, M. D., AUGUSTA.

The significance of uterine hemorrhage as a danger signal is a matter of grave importance, and can not be too much impressed upon the attention of every practitioner of medicine, as its careless observance is a reproach to the profession when the warning is sounded too late.

There are a great many conditions, all more or less pathological, that may cause a hemorrhage from the uterus, but I wish to refer particularly to those that predispose to cancer in some form. If it is true, as Crele stated at Chicago, in 1908, that one woman in every eight who reaches her thirty-fifth year dies of cancer, and that there are probably by these statistics 80,000 women so affected now in the United States, which statement I am not prepared either to affirm or deny, it certainly behooves us to look very closely into the early causative factors that go to make this great mortality.

Of the first 11,382 gynecologic cases admitted to Johns Hopkins in fifteen years 306 were cancer (Kelly). However, it is one of the beauties of medical statistics that they give the largest results in theories from the smallest investments of facts.

This subject as to cancer is not treated of singly in any textbook nor can it be. Abnormal bleeding from the uterus is a symptom, not a *disease*, and as such is associated with many conditions of diseased or perverted organic functions. In the question of menstrual excess the original type must be compared with the existing conditions in order to make a fair estimate of the flow. Traumatic or surgical hemorrhage may be at once recognized and controlled, but a hidden, unexplained hemorrhage is always significant, and if persistent, or recurrent, is regarded as a plain symptom of pathologic change somewhere. Hemorrhage *may* occur

from sudden overwhelming distension or congestion, but back of this there is probably a lessened resistance in the vessel coats either local or remote. For convenience the causes of hemorrhage may be divided into local and general, and special, as foreign bodies in the uterine cavity. Those that are local or uterine are, displacements, pregnancy, chronic inflammation, malignant tumors, cervical disease and inversion; quite a large field itself.

The general causes are acute or chronic diseases, some of which produce changes in the blood, as hemophilia, scurvy, purpura, syphilis, phthisis, infectious diseases, especially scarlet fever, and venous obstruction, as mitral insufficiency, disease of the liver and portal veins, or kidneys, and tumors. Malignant diseases cause hemorrhage by bringing more blood to the uterus for their nourishment, and ultimately by breaking down of tissue. Tumors cause hemorrhage by obstructing venous circulation. The more severe hemorrhage here is caused by the submucous variety of tumors, and next by the interstitial variety, and much less so by the subserous variety unless large enough to cause much pressure; ovaritis, fecal impaction, diseases of the rectum, bladder or broad ligaments; in fact, anything that will interfere with free circulation in or about the uterus may cause hemorrhage. Psychic conditions, as hysteria, fright, sorrow or fear, also the habits of high living and alcoholism, or a change from a low to high altitude, increasing the blood pressure, but in all these cases there is lessened resistance—pathologic—somewhere to be *looked* for and *cared* for in an intelligent treatment of the case. Excessive irregularities in menstruation after puberty are nearly if not always pathologic.

The importance of a correct diagnosis of uterine hemorrhage can not be overestimated; the mistake is too often made of ascribing these symptoms to "change of life" and the true conditions are revealed to examination too late, and herein is the neglect of a duty—and the sorrow of humanity in many lives sacrificed.

Change of Life. Hemorrhage and metrorrhagia are *never*

caused by the normal menopause, and when profuse menstruation or irregular hemorrhage occur they must not be attributed to the change of life. The same is true of irregular bleedings which take place after the climateric has been established, and of hemorrhages which sometimes occur long after menstruation has ceased.

In this connection it may be interesting to note the following records of late menopause found in literature:

By Battey, menstruated at 93.

By Pirou, menstruated and pregnant 72 and 2nd month.

By Sumpter, menstruated at 60, 70, 77, 80.

By Norton, menstruated at 74.

By Royle, menstruated at 67 and 93.

By Neumann, menstruated 60 to 104.

By Kisch, menstruated at 60.

Therefore it appears that the age limit is not one which can be defined with any approach to accuracy.

In temperate climates 40 to 50.

In tropical climates 30 to 40.

(My own case at 76, pregnant at 52.)

Case 87, never menstruated, married, external genitals normal. Man 73, lady 67; pregnancy.

These phenomena of hemorrhage after the menopause always denote some pathologic condition and a physical examination must be insisted upon, which will usually reveal the presence of cancer, a uterine neoplasm, inversion of the uterus, or perhaps a benign fungoid growth of the endometrium.

The firm attachment to and blending with the subjacent muscular layers, its having lymphoid tissue as a part of its structure, its peculiar office and secretions makes the endometrium not simply a mucous membrane but a lymphatic structure. There is no structure in the body that presents so many different phases and undergoes such rapid and marked changes as the uterine mucosa. In infancy, adolescence, maturity and old age it takes on so many attributes as to modify very greatly the processes that affect it. In

menstruation, pregnancy, post partum conditions, and the climateric the changes are marked and peculiar; besides, these are congenital defects and pre-existing diseases. Endometritis proper is one of the best nourished and most permanent of the uterine diseases, and probably the most neglected. Very many if not all of the diseases of the pelvic structures have their origin in or are directly associated with endometritis.

Endometritis is the remorse of a guilty uterus. The lymph spaces in the mucosa and muscular layer empty into diminutive lymphatics which form a delicate network in the serosa and in turn pour their contents into larger vessels, which pass out through the broad ligaments. A knowledge of the lymphatics of the uterus, their course and distribution, is essential to an understanding of the graver forms of infective diseases. It is upon this structure when after long continued process it is broken down, that the most obscure and fatal forms of cancer are begun, the only symptom having been irregular or continuous and persistent bleeding: this hemorrhage occurring after the menopause is invariably significant.

Uterine Catarrh.—This is a term frequently employed in this country, but it is unscientific. Catarrh in general has reference to a superficial inflammation: in disease of the epithelial layer where it exists manifested in anomalous secretions. When this extends deeper we call it parenchymatous or interstitial inflammation: now, the structure of the mucosa is the same as that of the ducts to the glands, and a true distinction can not be made between catarrhal and parenchymatous inflammation. Abnormal bleeding from these surfaces is always significant of unhealthy conditions. Hemorrhage from the presence of fibroids, very small or greater, is often mistaken or overlooked: these growths are no longer assigned to the menstrual period exclusively: they may develop after the menopause as well as before menstruation is established. They are found in latent areas of perverted structure in almost all uteri of any age, on section

showing like knots in a tree trunk, not only after birth but before it; these areas under certain conditions may take on cluster of left-over cells which were not utilized in the formative process of the uterus. Young fibroids have much the same relation to the terminal branches of the uterine arteries that neuromata bear to the epineurium of the nerves; and so we may find in one uterus all the forms of fibroid. These simple tumors may become degenerated or infected and develop malignancy, either from a remote cause or tuberculosis or local infection. All this makes the symptoms of hemorrhage so commonly associated with fibroids gravely significant. We know that there is a peculiar non-resistance to pathologic processes in certain organs to the development of cancer. Seven times more frequent is cancer in the alimentary canal of men than females, eighty per cent. of all cases in males being in the alimentary canal, but in females the same per cent. (80) is found in the reproductive organs —the *non-resistant fibroid* areas. Traumatism, and aging processes, are the only causes; it is not found to be parasitic.

Infected fibroids or malignant degeneration of uterine fibroids is not uncommon and is most frequently sarcomatous.

Cancer of the endometrium or cervix is associated with fibroids with sufficient frequency to justify the belief that the fibroid in some way predisposes to cancerous degeneration; if cancerous product makes its way into fibroid tissue it will become cancerous. If fibroids are abraded or ulcerated (broken down) they may become cancerous, and the earliest and most prominent symptom is hemorrhage.

When fibroids begin to induce hemorrhage it is a dangerous sign of too much pressure or disintegration, or of infection, and the sequence is often malignant.

The habit of taking all uterine scrapings as examples of endemetritis is to be deplored since it interferes with our getting a satisfactory knowledge of the real frequency of the affection, and encourages unnecessary operation. Kelly says acute or chronic endometritis is a rare condition, but

follows his statement with so very many modifications as to make his meaning obscure.

Sclerosis or atheroma of the uterine blood vessels and calcification are among the recently given causes of uterine hemorrhage, but they, like all the many which can be named, arise from degenerative causes, and these degenerations making for *lessened* resistance in a worn-out structure, obscure or more or less defined are what we find too late to have resulted in an inoperable malignant condition.

There are three points I would like to stress, viz., that non-resistant areas are specially liable to become malignant, that endometritis proper by the average practitioner is but little understood and appreciated, as the primal factor in almost all pelvic disorders, and is a very frequent basis of malignant diseases: also, that fibroid areas or tumors are weak points of attack, and more frequently than we suppose degenerate into malignant growths.

References: Bland-Sutton, Cullen, Kelly, Gilliam, Dudley, Greene's Pathology, and others.

ANTIPYRETICS IN FEBRILE DISEASES.

BY JAMES B. BAIRD, M. D., ATLANTA.

Febrile diseases are characterized by the existence of fever.

Heat is the essential element and constant representative of fever. The cause of fever is believed to be the overproduction or the under-dispersion of heat, or both. The usual concomitants of fever are lassitude, thirst, anorexia, headache, accelerated pulse and respiration, diminished secretions and altered excretions. Behind this perversion of function, in addition to the effect of heat, are, perhaps, various influences, mostly toxins of different kinds, operating, possibly, as contributing causes of fever, through the nervous system.

Whether the exhausting and destructive effects observed in connection with fever are due exclusively to heat, or, in part, to the action of specific or other toxins, as above suggested, has not been determined. But if heat is not fever, it is, at least, the invariable evidence and associate of fever, and the relationship existing between them is extremely intimate. If the body heat is above normal, fever exists. If it is not elevated, fever is absent. The degree of heat represents the amount of fever. The rise and fall of temperature—the behavior of heat—indicates the kind of fever. Its decline proves the subsidence of fever, and when abnormal heat disappears, fever has ceased.

Even if heat is not the essence of fever, but is only the appreciable expression of an occult underlying cause, in the present state of knowledge, it is, in any event, the part of fever, or the evidence of fever, with which we are acquainted, the tangible part, so to speak, and the part which we can control with the means at our command.

The importance of fever depends somewhat upon its intensity and its duration. Sustained hyperpyrexia is always dangerous in consequence, chiefly, of the degenerative

changes induced in the nervous and muscular tissues. Secondarily, on account of interference with secretion and excretion, of causing discomfort and preventing rest. Thus, nutrition is impaired or arrested, normal elimination is impeded and refreshing sleep is denied. This combination of events provokes a more or less rapid asthenia, which is manifested principally by its effect upon the circulation.

Different persons are variously impressed by fever; some are more sensitive to heat than others, and suffer from any excess. Doubtless, too, attendant circumstances influence more or less the effect of heat upon the individual.

A moderate fever of short duration seems to do but little damage to the tissues. A fever of greater intensity or more prolonged, debilitates in greater degree and a high fever may rapidly exhaust vitality.

On account of idiosyncrasies and of varying conditions in different cases, it is impracticable to fix the exact amount of heat that is capable of producing disastrous or dangerous results. But it may be stated generally, that when the comfort of the patient is thereby seriously disturbed, this feature of an attack—the mere matter of heat—becomes in itself a question of concern, and, in my judgment, deserves and ought to receive special consideration. Perhaps, in the great majority of cases, it is safe to accept 103° Fahr. as the dividing line. Below that point, intervention may be optional, but above that point it is more or less imperative, because, as has already been pointed out, of the spoliative, the wasting effect of excessive and protracted heat. Reduction of the heat promotes comfort, this comfort conserves the vital forces, the conservation of the vital forces retards asthenia, the retardation of asthenia often insures recovery. Thus, antipyretics may, and undoubtedly frequently do, preserve the strength and serve to safely tide the patient past the dangers of exhaustion, toward which, in fact, is the most dreaded tendency of many febrile diseases.

It is virtually certain, that few conservative men will be willing to credit a doctrine which has been recently promul-

gated to the effect that excessive heat may be beneficial to the patient because, forsooth, it is injurious to certain bacteria.

No doubt exists as to the destructive effect of heat upon bacteria—enough of it will destroy almost anything. Bacteria, like individuals, may be burnt up. Corrosive sublimate, arsenic, carbolic acid, etc., are also capable of destroying micro-organisms—and, at the same time, the patient. Likewise, a sufficiently severe blow upon the patient's head will doubtless terminate the career of any infecting germs, but this method of reaching a pathogenic agent would scarcely be regarded as within the province of medical practice. It is a cardinal principle in therapeutics that the patient should be treated, and not, necessarily, the disease. Certainly, it is reprehensible to risk the safety of the patient by the eager pursuit of real or hypothetical causes of obscure and uncertain character.

The external application of water has long been regarded as an effective means of reducing abnormal heat. The temperature of the bath may range from hot to cold. The bath may be given in a tub, or by means of general or partial sponging of the surface, or it may be given in the form of a wet pack. The tub bath is seldom available in private practice for adults, but in the case of children, who may be easily handled, it is the most convenient mode of administration. The general sponge bath is the method commonly employed. This involves the use of a large rubber sheet upon which the patient is placed, the edges of the sheet being elevated by means of folded or rolled blankets. Water is freely applied with a large sponge to the trunk and limbs—to the several parts in succession. The surplus water which collects in the rubber sheet, as it becomes heated by contact with the body, may be soaked up and removed by the sponge. During the bath, an ice cap should be applied to the head, and sharp friction of the skin should be maintained. The bath may be continued, ordinarily, for about twenty minutes. The partial sponge bath is a modification of this plan. The rubber

sheet is omitted, and one limb after another may be placed upon a folded blanket to protect the bedding. Only a very moderate amount of water is used. The trunk may be similarly treated. This bath involves no exposure of the patient and very little exertion, and it is often surprisingly satisfactory and efficient. The wet pack is sometimes an advantageous substitute for the bath. The manner of its empolyment is well understood.

In the great majority of cases, the tepid or warm bath is to be preferred to others because it is most agreeable to the patient. Cold water frequently causes an undesirable shock. If water at a lower temperature is preferred, it is better to effect a gradual reduction as the bath progresses. Hot water is sometimes more acceptable and equally efficacious. Ice water, in some cases, is well tolerated and yields excellent results. The bath may be repeated at intervals of three, four, six or more hours. The temperature should be taken one hour after the bath to accurately ascertain the effect.

If the bath—tepid, warm, hot or cold—is not well borne, unreasonable persistence is a mistake. It should be suspended and this mode of treatment should be abandoned. The ice cap constantly to the head is a serviceable resource, either supplementary to the bath or independently of it.

Unfortunately, the bath does not always accomplish the object sought, or the beneficial effect may be so transitory that it is of little value. The temperature may even rise during or immediately after the most approved bath, or any form of bath, in consequence of cyanosis or shivering following its application, may be inadmissible. In this event, or when for any reason, the bath is not available, or advisable, the alternative lies in the direction of drug antipyretics. We must, under these circumstances, either turn to these remedies or stand idly by and abandon our patient to his fate, while the excessive heat proceeds, perchance, to annihilate a few pathogenic micro-organisms!

Of the several antipyretic drugs which are worthy of confidence, I have, for many years, prescribed phenacetin in

preference to all others. I consider it the safest and most reliable of this class. Properly used, in cases where actually existing conditions do not distinctly contra-indicate such treatment, it is entirely harmless and positively beneficial. In suitable doses, judiciously employed, we need have no fear whatsoever of any alleged depressing effect. It may be fortified, if we like, by tonic doses of strychnine or combined with citrate of caffeine and it is not incompatible with stimulants. A dose of two or three grains, rarely increased to four or five grains, repeated as required, at intervals of two, four or six hours, is usually sufficient. Its administration in this manner may serve as an admirable substitute for the bath, or, when the bath alone is not effectual as shown by the after-bath temperature, it may very properly supplement the bath, and thus the combination of the two measures may be successful when neither, unaided, will suffice.

Under no circumstances should its use be declined on theoretical, fanciful or imaginary grounds. Practical observation has shown that it is potent for good when rightly used, and estimates of its worth should not be based either upon misuse or abuse. If this standard for judging meritorious articles should prevail, many of our most valued and most trustworthy remedies would be discredited and possibly would be rejected. If phenacetin allays heat, checks waste, relieves distress and promotes comfort, its action must necessarily be the opposite of depressing. It, in this way, actually contributes to support and thus becomes, in truth, a sustaining agent. This position is correct even in regard to those diseases which are essentially asthenic or which have an admitted tendency toward asthenia. It is contended that although some depression may, at times, be manifest, this moderate and temporary depression, which may be easily controlled, is of far less consequence than the rapidly exhausting effect of excessive and long continued heat. Abundant experience sustains these views, establishes these facts and warrants the following conclusions:

1. Heat and fever are either identical, or are very closely allied.

2. Heat is universally accepted as the known representative, the evidence and the measure of fever.

3. Excessive continued heat is rapidly destructive of nervous and muscular tissue.

4. Under this degenerative influence, the brain and the heart more or less speedily fail.

5. Until the causes of disease—their nature, their mode of operation and their control—are more thoroughly understood, we should seek empirical correction of injurious effects.

6. Antipyretics reduce heat, and thereby remove the danger of exhaustion from this cause.

7. Refrigeration by means of water externally applied, supplemented by the ice cap, if necessary, is ordinarily preferable. If this plan should prove ineffectual or if it is not available or advisable, then, unless distinctly contra-indicated by actually existing conditions, drug antipyretics should be used.

8. Admitting, as is frequently alleged, that drug antipyretics may be in some degree depressing, this depression can scarcely equal the exhausting effect of sustained high temperature. Moreover, this depression, if it should occur, is subject to control.

9. Undoubtedly, heat in sufficient amount will destroy pathogenic organisms, and just so surely will it destroy the patient. If extreme hyperpyrexia is disregarded, the race between the victim and the invader, under the auspices of an absurd and irrational theory, becomes a mere endurance contest.

10. Antipyresis is not usually called for by a temperature below 103 deg. Fahr., but a continued elevation to or above that point becomes, in itself, a matter of concern, and it deserves and, generally speaking, should then receive special consideration and treatment.

Discussion.

Dr. J. W. Duncan, Atlanta: This paper is of such great importance to the Medical Association that we should discuss it freely. So many have been inclined of late years to disregard high temperatures. As Dr. Baird says, a temperature above 103 calls for antipyretics. The patient is not likely to digest anything, even egg albumen, with such temperature. When the temperature goes above 103 with nervous children there is great danger of convulsions, which if not dangerous are alarming, and it is much better to control the temperature as the doctor suggests than to allow the patient to go on with a condition which caused depression. In some cases a temperature even below 103 should be controlled by antipyretics.

Dr. W. B. Hardman, Commerce: As to the use of phenacetin I heartily agree with the doctor that it is one of the best antipyretics and not a dangerous drug to use. I think we have swung a little too far with the pendulum against the coal-tar derivatives. I have been using phenacetin a great many years and have never seen any unfavorable symptoms when used in a proper manner and in proper dose. If the temperature is causing heart weakness, small doses of phenacetin, instead of making the heart worse, will, by quieting the nervous system and decreasing the temperature, benefit that organ. We used to depend a great deal on the condition of the patient as to how he stood the temperature, but if Dr. Baird's position is correct, and I believe it is, that would not matter much. If heat is destroying the tissues and the vital forces it will do as much damage in one as another.

Dr. Jas. B. Baird, Atlanta (closing): I merely desire to add to what I have already said, that I fear a prejudice exists in the minds of many practitioners in regard to the use of internal antipyretics. My experience in hundreds of cases leads me to the fixed belief that any unfavorable estimate of this class of remedies is unfounded in fact. Some

of these drugs are not depressing or dangerous when properly used—on the contrary, as shown in my paper, they contribute indirectly to support. In many diseases, we are without the means of controlling the essential morbid process, or of correcting the cause of the affection, but we may, nevertheless, mitigate the severity of an attack and contribute toward a satisfactory progress and a favorable issue by controlling mischievous symptoms, especially excessive heat and pain, and, in this manner, we may be able to establish a successful tolerance of a self-limited disease—which, in effect, is equivalent to controlling the disease itself.

THE PRINCIPAL CAUSE OF TYPHOID FEVER IS THE COMMON HOUSE FLY.

BY J. W. PALMER, M.D., AILEY, GA.

Typhoid fever is an acute, self-limited infectious disease, due to the implantation and proliferation of a vegetable germ, called typhoid bacillus, known as the bacillus of Eberth. Typhoid fever has no specific treatment, consequently the special forms of treatment that have been brought forward from time to time with extravagant claims in their behalf soon proved to be no better than those already at our command. Typhoid fever is not an abortable disease, if you have a mild infection you have a light attack just as you would in a mild case of smallpox, but if you have a malignant infection you will have a serious case of typhoid fever regardless to treatment, just as you would in a malignant case of smallpox. I don't mean to say that there are no drugs capable of exerting favorable influence over this disease, but I do mean to say that we should take the middle ground in our battles with this disease, bearing in mind the limitations as well as the possibilities of medicine, that the indications are to sustain life and meet the urgent and dangerous symptoms as they arise, and to treat the patient and not the disease. Thus we see that typhoid fever is an incurable, preventable disease, and as prevention is the highest aim in medicine, it becomes our duty to treat typhoid fever more from a prophylactic standpoint than from a curative one. Therefore the object of my paper is to show that it can and will be thoroughly eradicated with the destruction of the common house fly. I venture to say that the common house fly is responsible for *eighty-five per cent.* of the cases of typhoid fever in the city and ninety-five in the rural districts. The different ways that typhoid fever can be contracted without the house fly may be summed up as fol-

lows: First, by direct transmission of the typhoid bacillus from handling or drinking or eating after the patient without using proper antiseptics. Eating raw oysters that feed where the water has become contaminated with the typhoid bacillus. Body excreta which contain the typhoid bacillus may dry in the air and be wafted around in the atmosphere and be inhaled. The drinking water that has become contaminated with the typhoid bacillus is not due to the house fly, except where infected flies may have fallen in the water. It is the common belief that most of the cases of typhoid fever come from drinking water, but if this was true there would not be any typhoid seasons, as it would be just as prevalent one time of the year as another. I think I give full credit to all these causes and probably a few others when I say that the greatest per cent. they can claim for typhoid fever is fifteen per cent. I know this is true in the rural districts, in fact, typhoid fever to-day is largely a rural disease.

Dr. L. O. Howard, Chief Entomologist of the Bureau of Agriculture, from whom some of my information of the common house fly is derived, especially from a bacteriological and experimental standpoint, suggests and requests that we join him in changing the name of the common house fly to "typhoid fly," because they have too long been considered harmless creatures from the standpoint of disease and especially typhoid fever. We know that the fly is not solely responsible for the spread of typhoid, but he is so dangerous from every point of view and being the principal cause in the spread of typhoid, it should have a name which is almost wholly justified and conveys in itself the idea of serious disease. From now on I shall speak of the common house fly as the "typhoid fly," and henceforth and forever shall call him by that name, and I trust that every doctor in this Association will do likewise. There are about ten different species of flies found in houses; however, only one of these should be called the house fly proper, known as musca domestica, with which we are all familiar. Sometimes we think

that we are bitten by this fly, but instead it is the stable or dog fly, which resembles the "typhoid fly" very much. There is a specie, smaller than the "typhoid fly," which is responsible for the idea that these are the young of the larger flies and that flies grow after gaining wings, all of which is a mistake, as flies are as large when winged out as they will ever be. Of all these species of flies that infest the house, ninety-nine per cent. of them are the "typhoid fly" specie, musca domestica. These "typhoid flies" usually lay their eggs upon horse manure; this is their favorite larval material, and next to this is human excrement; they will also lay their eggs in most all places of filth. Eighty-five per cent. of "typhoid flies" come from horse stables, ten per cent. from human excrement and the other five per cent. from various sources. It is ten days from the time the flies lay their eggs until they are developed into full grown flies. Each female fly lays one hundred and twenty eggs at the time as an average, and when these eggs develop into full grown flies each female in turn lays one hundred and twenty eggs and on it goes until frost, when the offspring of one fly will be billions. In this latitude there is plenty time for one fly to produce twenty-five generations; hence we can readily understand how the enormous number of "typhoid flies" accumulate and can't be missed when killed and caught in large numbers. The reason flies appear so early and in such large numbers after cold weather is because they hibernate in the puparium state in manure or at the surface of the ground at a manure heap. They also hibernate in houses as adult flies, hiding in crevices.

The recent discovery of the transmission and dissemination of typhoid germs by people apparently in perfect health has done more to strengthen the fly theory than anything else. It shows to us many sources, unknown before this discovery, from which the fly becomes infected and disseminates and infects our food and drink with the typhoid germs. It is these sources from which typhoid fever is contracted through the "typhoid fly" and not our drinking water, which

was so long thought to have been the source. The most important one of these disseminating individuals in perfect health is the one known as the typhoid carrier. This is an individual who once had typhoid fever and forever continues to liberate the germs equal to the time he was sick with the fever. These typhoid carriers have been proven without a doubt, as we all have on our minds the Georgetown infection from a woman milker from a dairy, the cases reported by Albert and Trask and a bacillus-bearing cook by Soper. It is claimed that five per cent. of all cases of typhoid fever become chronic bacillus carriers. The patient before he becomes sick with typhoid fever may have distributed the bacilli in many places, and after he recovers will have the bacilli in his feces for weeks and his urine for months. There may be present typhoid lesions in the intestines of a patient and still no typical symptoms of typhoid fever. One author claims an individual may become a typhoid bacillus carrier and never have typhoid fever. Many intestinal intoxications, fermentations, so-called malarial attacks and bilious attacks are really due to typhoid infection. The mild types of fever —third fever, known as para-typhoid—which is really nothing but typhoid fever and not being recognized as such no effort is made toward disinfecting the patient's excreta, and hence an epidemic. The above facts demonstrate so plainly how sporadic cases, how epidemics of typhoid fever occur, by those apparently harmless individuals strewing the typhoid bacilli unaware. The "typhoid fly" being a dweller in filth comes in contact with these germs, carries them and deposits them on our food or in our drinks, thereby giving us typhoid fever. Not having known the source of these germs, we falsely attribute it to our drinking water. As to the length of time the typhoid bacilli will live when deposited around and about by these individuals is limited, living longer in some places than others. If milk becomes infected with them they will multiply rapidly and if not eradicated will run on indefinitely.

The function of the "typhoid fly" in the human economy

is to carry bacteria from one place to another and the one mostly carried by them is the typhoid bacilli and what they lack of being responsible for all cases of typhoid fever is more than made up in causing other infectious diseases. It has been shown that when the "typhoid fly" is most abundant, intestinal diseases are on the increase and these diseases decrease just as soon as there is a falling off of the prevalence of these flies. They are great factors in the spread of tuberculosis, so we see that the domestic fly has passed from a disgusting and troublesome pest to a dangerous enemy to human life.

The number of bacteria on a single fly will sometimes reach many millions, depending on the season of the year and the locality of the flies. Dr. L. O. Howard caught 256 flies from several different sources by means of sterile fly net, introduced them into a sterile bottle and poured into the bottle a known quantity of sterilized water, then shook the bottle to wash the bacteria from their bodies, to estimate the number of organisms that would come from a fly falling into a lot of milk and found that the average bacteria on each fly was over three millions, hence the importance of keeping the flies from milk. These flies will ingest the typhoid bacilli, carry them around, deposit them with their "specks," which are as virulent and dangerous as the germs they leave when crawling around. The "typhoid fly" infection has been under investigation since 1890, but the true scientific evidence regarding its role as carrier of typhoid bacilli has just recently been worked out. Dr. G. M. Kober, in 1895, called especial attention to the danger of the contamination of food supplies by flies coming from the excreta of typhoid patients. Dr. Vaughan in a paper before the American Medical Association in 1900, said in regard to the prevalence of typhoid fever in the concentration camps of the U. S. Army, especially in the summer of 1898, that flies undoubtedly served as carriers of the infection, because flies swarmed over infected fecal matter in the pits, then visited and fed upon the food prepared for the soldiers at

the mess tents. In some instances where lime had recently been sprinkled over the contents of the pits, flies with their feet whitened with lime were seen walking over the food and the officers whose mess tents were protected by means of screens suffered proportionately less from typhoid fever than those whose tents were not protected. That typhoid fever disappeared in the year of 1898 with the approach of cold weathe r and the consequent disabling of the fly. We can all recall the outbreaks of epidemics of typhoid fever that occurred in the U. S. Army during the year 1898 and the Army Typhoid Commission said it was not due to the infected water, consequently it must have been due to the "typhoid fly." These flies have been shown to be the carriers of the typhoid bacilli in the Boer War, in the digging of the Panama Canal and in many other large enterprises. Dr. H. F. Harris, Secretary of our State Board of Health, in his report of slow fevers in 1906, calling this slow fever para-typhoid fever, said that none of these cases of fever were found in houses that were properly screened, which throws the responsibility on the flies. Dr. L. O. Howard, Chief Entomologist of the Bureau of Agriculture, in the Bulletin just issued shows that the fly is responsible for most cases of typhoid fever. My clinical experience with typhoid fever shows that practically every case of typhoid fever in the rural districts is due to the "typhoid fly." I have treated about one hundred cases of typhoid fever during the last four or five years and have not been able to trace a single case to infected water, but instead could trace nearly every case to "typhoid fly" infection. In all cases where my instructions in regard to the fly were carried out, the second case did not develop and when these rules were not carried out I had new cases to develop. I treated two families in which practically every member contracted the fever. They were tenants, had large families, lived in a one-room house with a shed that was used for a cooking and eating room. This shed had a large door which opened into the house, where the flies could go directly from the patients to the eating table. I had all the antiseptic

precautions carried out that were necessary and disinfected everything as in all other cases. The only difference was I could not control the flies in these families, had no way of preventing them from going to and from patient to the table and as the food was eaten there would be direct infection. These "typhoid flies" are the most capable and culpable of all the domiciliary pests, they are creatures of filth, breed in filth and live a consistent life of filth. They will not live where everything is scrupulously clean. Where there are clouds of flies there is somewhere near decaying matter or filth that ought to be removed. They are a foul and dangerous pest that at one moment will feast on putridity and the germ-laden products of disease, and then sport over the lips of beauty, the food on our tables or crawl upon eating and drinking utensils, laying a trail of typhoid or other germs wherever their feet touch. They are a migratory insect, visiting everything under the sun, and if there is a typhoid germ anywhere the fly will come in contact with it and when he does, and you prevent him from entering your cooking and dining rooms, may give you typhoid fever by causing the germ to get in your milk while milking, may go and deposit the germs on your fruit, such as grapes, apples, plums, peaches, strawberries and other things that are eaten without being cooked, consequently we should exercise care how we eat fruit or raw vegetables without being peeled and properly washed. The "typhoid fly" must be held responsible by the cities who have had and will have typhoid epidemics from the infected milk of dairies, because there are very few instances in which the milk could become infected, except by the contamination and dissemination of the bacilli by the fly; the fly is the medium through which the bacilli reach the milk of the dairies and when the bacilli once enters the milk they multiply indefinitely. It has been the prevailing idea that most of typhoid fever comes from drinking water. This idea has prevailed because we did not know of any other source to attribute the cause. I can't say much as to the infected water of the cities, but believe that most of the

city typhoid comes from the dairies that were infected by the flies and the contamination and dissemination of the typhoid bacilli in the city by the "typhoid fly." As to the infected drinking water of the rural districts I know that it is not the cause of typhoid fever and that it is not caused by the miasmatic and pythogenic theories. If the source was the drinking water we all know that practically every individual who drank this water would contract the fever, besides if it was the water the fever would be just as prevalent in the winter months as the other months of the year, as cold has absolutely no effect, whatever, on the germ, as you could keep a typhoid bacillus frozen in a block of ice for six months and it would still be virulent, the reason is it is vegetable and not an animal germ. The reason we have very little typhoid in the winter months we have very few flies to scatter the infection. I have very serious doubts about the bacilli filtrating through the earth into the well and when these germs do enter the wells it is through the surface water running into the wells or infected flies or trash or dirt falling or blowing in them, hence these things should be prevented.

It is claimed that hot and dry summers are followed by more cases of typhoid fever than hot and moist ones. Liebemeister claims that it is due to larger amounts of solid matter in springs, the poison being more concentrated is therefore more virulent, but I say that it is due to the fact that in dry, hot weather there are more flies gathered around homes from a greater distance and number of places in search for food and water thereby bringing the typhoid germs and depositing them in our drinks and on our food.

There are three things we will have to do in order to control typhoid fever. The development of the "typhoid fly" must be prevented, the destruction of the typhoid bacilli must be accomplished, as far as possible, but as this can not be carried out to perfection, we must absolutely prevent the flies from having access to our food and drink. To prevent the development of the "typhoid fly" everything on and

around one's premises must be kept scrupulously clean and no filth allowed to accumulate, because the fly breeds only in filth. The closets should be cleaned out, the excrement burned and two quarts of lime thrown under them once a week. There should be no hog-pens allowed near our homes. The lots, barns and stables should be as far away from dwellings as practical, and should be kept clean and dry. No open privies must be allowed. Lime should be freely thrown around our premises once a week. Eighty-five per cent. of the "typhoid flies" comes from horse stables, therefore it is very essential that special attention be given them and the best rules for handling them are those that are in force in Washington City, which are as follows: "All stalls in which animals are kept shall have the surface of the ground covered with a water-tight floor. Every person occupying a building where domestic animals are kept shall maintain, in connection therewith, a bin or pit for the reception of manure, and each day the manure from the stables or premises of the animals shall be thoroughly removed and placed in said bin or pit. This bin shall be so constructed as to exclude rain water, and shall in all other respects be water tight. It shall be provided with a suitable cover and constructed so as to prevent the ingress and egress of flies. No person owning a stable shall keep or permit any manure to be kept on his premises, other than the pit described, nor shall he allow the pit to be overfilled or needlessly uncovered. Horse manure may be kept tightly rammed into well-covered barrels for the purpose of removal in such barrels. The manure must be removed from premise when not in pits from once to twice a week, in well covered wagons." To prevent the flies from having access to our food and drink, we must screen our houses perfectly, and absolutely keep the flies out and those that do gain access to houses must be caught with fly paper or killed with insect powder or when there are only a few scattering ones they can easily be killed with a wire fly fan. Hotels that do not keep their cooking and dining rooms free from house flies should be condemned by the city or State

authorities, because sometimes we go into hotels and restaurants and are compelled to fight for our food with the large number of infected "typhoid flies," which may infect us and be the cause of our death. We should be very careful how we eat where there are flies and especially if there is a case of typhoid fever near. I never eat anything at the place where I am treating a case of fever, and advise everybody else to do likewise, unless the flies are absolutely screened from the house. I do not claim any credit for curing typhoid fever, but I do claim credit for not letting any other member of the family or anybody else, contract it from a case I may be treating. We should treat every case of continued fever from a prophylactic standpoint, just as we would typhoid. In treating a case of typhoid fever we must keep the flies screened out of the house, absolutely out of the cooking and dining rooms, in addition to the screening there must be a fly netting over the bed of the patient, a fly must never touch the patient. All discharges of the patient must be removed from the room at once, disinfected and deeply buried, or burned. We can disinfect it with lime, bichloride solution, or carbolic solution, but whatever agent we use it must be thoroughly mixed with the stools, stirring with a stick breaking up all solid lumps, then allowed to stand the required time before burying or burning. Six ounces of lime to one gallon of water makes the proper strength to kill the germs in one hour, and is preferable because it takes bichloride four hours and carbolic solution twenty-four hours to kill the germs. Solution should be kept in bed pan all the time. The bed pan, all vessels and dishes used by patient must be sterilized in boiling water. The patient's person should receive the best of attention in regard to cleanliness, and the clothes and bed linen should be boiled before being sent to the laundry or washer-woman. The physician and the nurse after administering to the patient must wash hands with hot water and soap, and then submerge them for a while in a 1-1000 bichloride solution. Keep the thermometer in antiseptic solution, and by all means never allow any one to

kiss patient, even in convalescence. By having all these rules enforced you will prevent the fly from disseminating the typhoid bacilli.

When we consider the wide distribution of typhoid fever, its endemic and epidemic outbreaks with the destruction of life and the damage to business in the affected communities, prophylaxis is forced upon us, and we are compelled to declare a war of extermination against the house flies. The English Government is awakening to this fact and in their parliamentary vote of the present year on disease investigation, one of the main points was to investigate the house fly as carrier of typhoid fever germs and others. Dr. Kober read a paper before the Governor's Conference on the conservation of natural resources, held at the White House in May, 1908, presented figures showing that the decrease in vital assets of the country through typhoid fever in a single year is more than $350,000,000, and that the fight against the house fly is responsible to a very considerable portion of this decrease in vital assets. It is said that there are now $10,000,000, or more spent each year for screen doors and windows to keep out flies, and yet they are allowed to breed unrestricted all over the United States, are allowed to enter the houses of everybody freely and spread bacteria over our food supplies in the market places, in our kitchens and dining-rooms. Typhoid fever is just as much an incurable disease as smallpox and yellow fever and should be classed with the self limited infectious diseases, and as yellow fever is being eradicated with the destruction of the mosquitoes, just so will typhoid fever be eradicated with the destruction of the common house flies, and if we do as much to suppress an outbreak of typhoid fever as we do smallpox and yellow fever, we would have as little trouble to stamp it out. Typhoid fever to-day is a greater scourge than tuberculosis, it is almost a national crime because it is absolutely preventable and the "typhoid fly," borned in filth and swarming with disease germs, is left alone to multiply unmolested. It is most important that all people join in the war of extermination against the

common house fly. Let every newspaper, every minister of the gospel, every schoolteacher, every physician, every public spirited man, householder and housewife in the land enlist promptly into the service to create a public sentiment in favor of destroying the "typhoid fly," and have rules making every day "fly killing time." The great commotion and excitement being raised about the newly discovered disease, pellagra, is well enough, but it is almost criminal negligence when the profession will devote so much time and energy to a disease that kills so few people to the neglect of the "typhoid fly" that causes thousands of deaths. In the words of Dr. L. O. Howard, let us remember: "It is the duty of every individual to guard so far as possible against the occurrence of flies upon his premises. It is the duty of every community, through its Board of Health, to spend money in the warfare against this enemy of mankind. This duty is as pronounced as though the community were attacked by bands of ravenous wolves." There should be appointed at this meeting of our association, a "typhoid fly" committee consisting of five executive members, and one member from each county in the State, whose duty shall be to educate the public, by giving public lectures, especially to public and high schools and colleges on the dangers of the "typhoid fly." Have literature published on the subject and distributed to everybody and in order that the profession may have power and means to fight the "typhoid fly," let this committee use their influence with their respective county representatives at the next General Assembly to have a law passed making the County Board of Health a part of the organized county government and clothed with certain specific rights and powers and that there be an appropriation made by the legislature to fight the "typhoid flies" of the State.

DISCUSSION.

DR. F. E. THRASH, Atlanta: This paper is upon the right subject, but I am inclined to doubt the propriety of attrib-

uting to the fly so prominent a role. Insects carry disease by different methods; one is where the parasite lives as host in the individual and in the insect—two cycles; malaria is a type of this class. Another type is where there is but one cycle—where the parasite has the same structure in the insect as in the individual: a type of this is elephantiasis. The third way is that class that carries a disease in a mechanical manner as the fly, and, there is no more reason the house fly should be called the "typhoid fly" than a doctor who puts a thermometer in a patient's mouth and then uses it in the mouth of another patient without sterilizing it and gives the other patient typhoid should be called a typhoid doctor. He would not like to be called a typhoid doctor. I do not mean to lessen the importance of the fly as a carrier of the disease but we must not overlook the other methods of its conveyance, which are too numerous to mention in this discussion.

Dr. Claude A. Smith, Atlanta: I wish to endorse this paper because I think it of more importance to the medical profession than any of the papers we will have at this meeting. We are all convinced from information furnished us through the army experiments that an enormous amount of typhoid fever may be directly traced to the common house fly as a carrier. The only point with which I differ from the essayist is the comparison with the mosquito as a carrier of yellow fever. The mosquito is the only carrier of yellow fever, while, as Dr. Thrash has said, flies are of course not the only carriers of typhoid. Drinking water, however, is not so frequently the carrier of typhoid fever as people commonly think. You would say this room is practically free of flies, but if you placed a stool from a patient here you would in a very few minutes find plenty of them crawling over it and soon after they would be in your dining-room, or somebody elses, crawling over the food. The mosquito, too, stays in one locality while the fly travels to a distance; it will travel for blocks. As to getting rid of them that is a problem that many cities are considering at the present

time. Washington is attempting to solve it and we in Atlanta are trying to. If we can get the proper laws passed we hope to reduce the mortality from this disease very materially. The ordinary common house fly, the musca domestica, breeds in horse manure; it does not breed in cow manure if it can get the other. Each fly lays 120 eggs and these soon hatch out so that in about ten days, in warm weather, there is produced 120 flies from the original female. It is a peculiar fact that if the manure is a week old the fly will not lay its eggs there. That is why in Washington they have an ordinance requiring the manure to be put in a pit and covered. In cities we can certainly control this matter and reduce the existence of typhoid fever to a very appreciable extent.

DR. HENRY MCHATTON, Macon: This question of the fly as a typhoid carrier is of extreme importance.

I have insisted for years that the fly was practically responsible for the vast majority of our cases of sporadic typhoid fever.

This position has been demonstrated by exclusion. We have taken up the question of water, and it was not that; then of milk, and it was not that; then shell fish and the other rare causes as uncooked vegetables or fruits, etc., and finally it was sifted down by exclusion of all other known causes to the common house fly.

The sections of this city most infected with the house fly are the sections having the most typhoid fever, and even there, the houses best protected with screens are the least infected.

The fly is certainly responsible in my opinion for nearly all cases of sporadic typhoid fever. I do not know when we have had an epidemic traceable to water or milk in this city. Certainly not in the past twenty-seven years.

DR. C. M. CURTIS, College Park: I would say a few words in support of Dr. Palmer's theory which I believe is correct. I have been doing country practice for twenty years and have

seen a good deal of typhoid fever and I think I have never seen a case that was not somewhere near a hog-pen. The old idea when I was at college was that decaying animal matter, heat and moisture caused typhoid fever. Since living in small towns my observation convinces me that a large number of cases of typhoid originate in surface closets or hog-pens and the germs are carried by the flies and conveyed to the milk pans or food. Four years ago in a little town where I resided the authorities decided to clean out the closets more frequently and to banish hogs from the community and at the same time nearly every one put in fly screens and in the last four years we haven't had four cases of typhoid fever. This convinces me that the fly is a potent factor in the dissemination of this disease and if they can be banished from the community it will be found that we will be protected against typhoid fever.

Dr. J. E. Paullin, Atlanta: I wish to thank Dr. Palmer for bringing before this association such a practical paper and one which will teach all of us a needed lesson in the prevention of typhoid fever. There seems to me to be little question about the great importance of the house fly in transmitting typhoid fever from one individual to another.

If all patients with typhoid fever are protected from flies and if the excreta from the patients is carefully disinfected this together with the proper screening of houses will very nearly stamp typhoid fever from our midst. For every case of typhoid fever some one is directly responsible, it is an exceedingly easy disease to prevent as has been brought out clearly and forcibly in this paper.

Dr. W. B. Hardman, Commerce: Dr. Thrash speaks of the thermometer as being a source of infection: I would like to know if there have been any experiments demonstrating this definitely. I always make it a rule to wash my thermometer well, but if it is possible to transmit the disease in this way the thermometer should be sterilized. As to drinking at a common fountain, how often does the bacillus in-

habit the mouth and is it likely to be transmitted in that way when not in the water itself? Another question: in regard to the transmission of the bacillus in running water, it causes of infection; how far can the germ be carried in this way?

DR. J. W. DUNCAN, Atlanta: This paper is a very interesting one and is perhaps theoretically correct. I have been doing general practice a number of years in a city where I don't think one house in fifty is screened and where there are plenty of house flies, and yet in 24 months I have not seen a case of typhoid fever. If the house fly is a typhoid fly, why is it I have not seen a case of this disease in two years? I cannot entirely agree with Dr. Palmer. While I believe the fly can carry the germ, I do not think it is the main cause.

DR. ST. J. B. GRAHAM, Ellijay: During the Spanish-American War Dr. Victor Vaughan of Ann Arbor was one of the men to find out about the transmission of typhoid and you are familiar with his work, but it is my opinion regardless of that that typhoid fever is a water-born disease as well as a fly-born one. We all know that these insects whenever they travel over micro-organisms carry them on their legs and transmit them to others by infecting the food, but there are other sources of infection as well. I think the matter of surface drainage has a great deal to do with the continuance of typhoid fever, especially where there is a light sandy soil. Where the excreta is improperly placed the community is certainly liable to reinfection if they live at a lower level. Why does the disease exist in winter when there are no flies? While admitting that the flies can carry the disease, I think that is only one of the modes of infection.

DR. V. H. BASSETT, Savannah: I agree with what has been said about flies, but it would be unfortunate to allow the subject to pass without calling attention to the fact that the instances in which the disease has been shown to be carried by water greatly exceeds those in which the fly has been

shown to be the carrier. In Georgia we have large areas in which the water supply is above suspicion but there are other parts where we do not need to hunt for any other cause. Where people drink diluted sewage we don't need to hunt for the fly as a carrier of the disease. It is, of course, one source of infection that should be cared for. About two years ago we had over two hundred cases, 60 per cent. of which were traced to the milk from one dairy. A case of typhoid had existed nearby and by means of flour dusted about it was found that a few hours later the flies covered with flour were found in the dairy, from this house.

How long the infection may persist in water is an important question. An investigation in Chicago has shown that it probably does not persist for a long time. The water of the Great Lakes will remain infected for ten or fifteen days while the water in the rivers will retain it for two or three days.

Dr. M. N. Stow, Jessup: As we are discussing the common carriers of typhoid, I want to say a word along that line. I endorse the paper but think there are other things equally as important as the house fly as a means of infection. Water infection is one and we get that in the mountains. It seems to be more malignant when carried by the water. It is termed up there mountain fever. I have witnessed in poor places where the families would not destroy their bedding, etc., the disease traced to old bed clothing that had been used three years previously. I would like to ask how we are to be immunized against the disease when there are so many sources of infection?

Dr. J. W. Palmer, Ailey: (Closing). I said in my paper that the fly is the principal carrier of typhoid fever. The speakers seem to think that I referred to the house fly as the only cause. I venture to say this, however, that in 75% of the cases in the city and in 85-90% of the cases in the rural districts the disease can be traced to the house fly as the carrier.

I am surprised at Dr. Thrash's statement as to their being

no more reason for calling it the typhoid fly than there is for calling a doctor who doesn't properly sterilize his thermometer a typhoid doctor. If we can get the people to calling this fly the typhoid fly, as Dr. Howard has requested us to do, we will have accomplished a great deal in an educational way towards the stamping out of this disease. I thank you all very much for your discussion and endorsement of my paper.

OCULAR SYMPTOMS IN GENERAL MEDICINE.

BY ALEX. W. STIRLING, M.D., C. M., (EDIN.), D. P. H. (ENG.)

It happens not infrequently that ocular symptoms accompanying disease elsewhere, if observed and read aright, may throw a helpful illumination in the search for a correct diagnosis, prognosis, and treatment. I shall endeavor briefly to recall to your minds some of the evidence afforded by the eyes which seems to be especially worthy of consideration.

The upper lid may tend to droop from a variety of causes; but when in adults not far advanced in years, both upper lids, equally or unequally, have recently inclined to fall, and are quickly tired by efforts to raise them, an investigation should immediately be made of the muscles, for myasthenia gravis may be setting in.

Paresis of Extra-Ocular muscles immediately suggests syphilis, rheumatism, and so on, when not evidently due to some coarse lesion in the orbit. But paresis of the external rectus may be the first indication that one's patient has recently suffered from diphtheria. It may also point to locomotor ataxy; and it may be a result of intra-cranial tumor, not necessarily from direct involvement in the growth but perhaps merely from the resulting rise in intra-cranial pressure. There are also occasional cases in which one or more of the nerves supplying extra-ocular muscles are paralysed at the same time that the trigeminal is acutely painful, some idea of the position of the lesion being thereby indicated.

Movement of the eyeballs, instead of being diminished, may be abnormally active. I shall not refer to the nystagmus of the eyes in which vision has always been poor, or to occupation nystagmus; but to an acquired movement whose causation may not be so apparent, and which is especially evident when the eyes are turned far to one or the other side. This symptom should at once lead to a search for those others which make up the picture of disseminated sclerosis; and

it should be carefully differentiated from that jerk one way and gradual return which is common in healthy eyes when turned excessively in one direction.

Then, the globes, or occasionally only one globe, may unnaturally protrude. Besides tachycardia, certain so-called ocular "signs" are generally associated with this condition, when it is a symptom of exophthalmic goitre, in which case it remains *post mortem* and is probably due to an excess of orbital fat.[1] These "signs" are that of Dalrymple, an abnormal degree of separation of the two lids: Von Graefe's, a lingering of the upper lid behind the globe when the patient looks down; Stellwag's, an insufficient closure of the lids on winking, which is also diminished infrequency; and that of Moebius, a weakness in the power of convergence; while the lids may be pigmented.

1—Murray-British Medical Journal. Feb. 13, 1909.

In the conjunctiva and cornea the recurrent presence of little raised patches called phlyctenules, and their appearance at all in adults, are coming to be looked upon as affording suspicious evidence of tubercule.

Interstitial keratitis, or years afterwards the besom-shaped lines in the cornea which after interstitial keratitis always remain visible to the magnifying glass, supply a significant hint that the patient is the subject of inherited syphilis. This is certainly true in 60 or 70 per cent. of cases, while Hutchinson's teeth and the other well-known marks of the disease may be present to confirm the diagnosis.

Iritis should always instigate a search for its causation, which may unearth some hitherto unrecognized disorder, such as syphilis or gonorrheal rheumatism. But in iritis attention should be especially directed to the various body cavities: nose, mouth, intestines, and so on, in the hunt for some toxin-producing area; while the possibility of tuberculosis should not be forgotten.

In diseases of the nervous system the state of the pupils is commonly investigated early in the examination. The abnormality which bears the name of Argyll Robertson (who

after a long and useful career died the other day) means as you doubtless know, that there exists an interruption in the light carrying nerve fibres proceeding to the pupillary centre, while the impulse to pupillary contraction which always accompanies the act of convergence is not interfered with. This phenomenon of indifference to light along with contraction to convergence is generally a very late indication of syphilis, but often a very early sign of approaching locomotor ataxy, while it is believed that when it is accompanied by a distinct inequality in the size of the pupils, general paralysis is not unlikely to follow.

Inequality in the size of the pupils, (leaving out of consideration its more common origin in the third nerve), may arise from pressure upon the sympathetic in the neck. Irritation will of course produce a dilation, paralysis a contraction of the pupil, which in the latter case will not dilate after the instillation of cocaine.

There is a normal pupillary oscillation to light, but it is of short duration. Sometimes, however, it is of greater permanence, and in epileptics it may not cease at all. In neuritis affectingthe optic nerve between the eye and the chiasma the primary contraction to light quickly diminishes, the pupil gradually dilating while still under the influence of the light. This symptom, especially when accompanied by blindness of the middle field of vision, most marked for colors, enables one to distinguish this disease from hysteria, with which it may easily be confounded, seeing that the eye externally and internally may appear to be perfectly normal.

It is important to remember in these cases that, though the eyes may, and in my experience probably will, recover normal or nearly normal vision while the optic disc has in the meanwhile distinctly paled, a large proportion, perhaps one-half of them, if they have not already done so, will sooner or later develop signs of insular sclerosis, of which the ocular symptoms were in reality but a part. Retro-ocular neuritis may affect one or both eyes; but there are lesions which, situated on one side of the brain, blind one-half

of each eye. The two eyes are at least as truly one organ as are the two sides of the nose or tongue, as this their nerve supply clearly indicates. The patient may complain of being blind in one eye when he really means that he has lost the right or the left half of the visual field of each eye. This symptom, homonymous hemianopia, means that a lesion exists on the side opposite to the blind area somewhere in the brain after the visual fibres from the one eye have been joined by the visual fibres from the other, i. e. either in the optic tract, the visual centre in the occipital lobe, or the tissues which connect them. Which part of the afferent tract it is may be ascertained from the following observations:

The afferent fibres of the pupillary reflex circuit correspond in position to the visual fibres from the chiasma to the "primary optic centres," viz.: the external geniculate body, the pulvinar of the optic thalamus and the superior corpus quadrigeminus. If then, in any position of this, the optic tract, a lesion should occur it would interfere with both sight and the action of the pupil. Light carefully thrown upon the blind half only of either eye in homonymous hemianopia would therefore fail to produce contraction of the pupil. But the visual fibres after leaving the optic tract enter the primary optic centres while the pupillary fibres do not. A lesion in one of these centres, while the tract remained intact, would therefore produce homonymous hemianopia, but would not prevent the reflex contraction of the pupil to light. An arterio-sclerosis is one of the commonest causes of this symptom, which may therefore be of value as an indication of a dangerous condition of the vessels.

Another, though rarer form of hemianopia, is that in which the outer or temporal half of each field disappears. This is the result of disease affecting the optic nerve fibres which supply the nasal half of each eye and is located at the chiasma where a part of each optic nerve crosses to the other side of the brain.

One of the most common lesions associated with bitempo-

ral hemianopia is an enlargement of the pituitary body, such as is found in association with acromegaly.

An examination of the pupils should always include an investigation of what is called its consensual reaction. The nuclei of the third nerve on either side of the brain are joined by nerve fibres. When light is thrown upon one pupil both in health will contract, probably through the memore or less clearly fixed by other symptoms.
dium of this communication. If they do not a lesion must exist somewhere in this circuit, whose precise site may be any of the conditions hitherto mentioned, but without its aid tion, because it may be apparently perfect when the papilla

The opthalmoscope is not essential for the diagnosis of neighborhood. But it is probable that by close attention to one would be severely handicapped when dealing with certhe comparative advancement of the neuritis in the two eyes tain other and very important diseases.

Without the observation of the intra-ocular ends of the optic nerves the diagnosis of an intra-cranial growth must always be comparatively obscure, though the pressure of a brain tumor can never be predicted with certainty on account of the presence of papillitis, the so-called "choked disc," alone; yet sometimes it is the most suggestive feature in the case. Neither can the size or nature of the growth be determined by the degree of disturbance in the disc or its neighborhood. But it is probable that by close attention to the comparative advancement of the neuritis in the two eyes it is possible to say in which side of the brain the growth will be found. The state of the vision may give no indication, because it may be apparently perfect when the papilla is swollen or engorged. But it may be evident with the ophthalmoscope that the papillitis is only advancing in one eye to a position to which it has already attained in the other, the earlier affected being the side on which the growth will probably be found.

Optic atrophy is the logical conclusion of true optic neuritis, which choked disc, however, is not. Choked disc is at

first but an oedema, though later a real inflammation may set in. On the other hand there are cases of atrophy without any previous sign of inflamamtion, and it has been a curious observation that where optic atrophy begins early in locomotor ataxia more vital parts of the nervous system are less likely to become affected than is usually the case.

One of the most valuable privileges granted by the ophthalmoscope is the power to examine under magnification the living blood vessels of a terminal system. With it one may for instance observe various stages in the progress of arteriosclerosis, and gain at least some information concerning the probable state of the smaller vessels in the brain and elsewhere. There is a picture of the fundus clearly before the eye of every experienced ophthalmologist, which it is unnecessary to endeavor to describe here, but which, except in the albuminaria of pregnancy, at once suggests such a condition of things as necessitates a very bad prognosis for life. The degenerative changes may be very clear; but it is important to bear in mind that precisely the same appearance may be found without discoverable kidney lesion.

Again, the examination of the ocular fundus would clear up an obscure case with febrile symptoms should tubercular nodules be discovered in the choroid.

Discussion.

Dr. H. H. Martin, Savannah: I think we are all indebted to Dr. Stirling for this highly scientific and valuable paper. The ocular symptoms of constitutional disease are so clear and distinct and their importance is so often lost sight of that it is also a timely one. The Doctor referred in his paper to the study of the fundus through the ophthalmoscope for the changes in the blood vessels in so-called albuminuric retinitis. This condition was formerly supposed to depend upon kidney lesions, the kidney lesions being dependent upon something else, but modern pathologists are coming to the view that Brights' Disease is a condition originating primarily in blood vessel changes. We find in the fun-

dus at times changes similar to those found in albuminuric retinitis, which we call pre-albuminuric retinitis: the small arteries of the retina undergo sclerotic changes, with retinal hemorrhages, without any albumia or casts in the urine, but if we watch the case it will develop what is known as Bright's Disease. The condition of choked dise is one often discovered by the ophthalmoscope before the patient has shown any clinical symptoms. In multiple neuritis it is often discovered in this way before there is any loss in function. Paresis of the ocular muscles will often lead to a diagnosis. I have in mind one case, an engineer on a river tug, who was stricken with what was called acute indigestion, carried to the hospital and developed total blindness. The ophthalmoscope showed optic atrophy and there was total paralysis of both motor-oculi nerves. By a process of exclusion a diagnosis of hemorrhage lying over the floor of the fourth ventricle was made. We can often detect obscure nervous conditions by ophthalmoscopic examination. Constitutional conditions manifest themselves in the eye sooner than elsewhere.

Dr. W. R. Houston, Augusta: I have been impressed with what has been said as to the value of examination of the eye in the diagnosis of general diseases. It would be most desirable if we were able to make an ophthalmoscopic examination a part of our regular routine work, but it is often impracticable unless the indications for such an examination are very clear. I was much impressed with a series of cases by Dr. Cushing of the Johns Hopkins Medical School who attributes the great advance in our knowledge of brain tumors ot the introduction of direct illumination of the eye by means of the electric ophthalmoscope. We can take this instrument to the bedside of a patient. Having procured such an instrument I found with a little practice that I was able to make a very satisfactory examination of the background of the eye. Where it is impossible for us to have the specialist who is, of course, our best friend in these cases, we should do all we can to familiarize ourselves with the use of this instrument.

MODERN CLINICAL DIAGNOSIS: ADVANTAGES AND LIMITATIONS.

BY RALSTON LATTIMORE, M. D., SAVANNAH.

Within the past ten weeks we have had a case in Savannah which has taxed to the extreme limit the combined diagnostic acumen of Physicians, Surgeons and Specialists. The diagnosis up to time of death remained unsettled and undefined.

How far do we succeed and what are we called upon to do in these cases which baffle for ten weeks our efforts? Cases of this kind certainly make medical literature and upon a rational diagnosis depends the advancement of medicine.

The patient 62 years of age, excellent habits, a good liver and a man of extraordinary mentality was suddenly attacked with a chill, which was followed by vomiting and purging and a temp. 103.5; Diagnosis, Acute Intestinal Toxoemia.

Following week, temperature was daily progressively lower; at the end of seventh day, morning temperature, normal; evening temp. 99.2.

At the end of the week, patient had a second chill, followed by a rapid rise, a heavy sweat and a decline of temperature to normal. I examined patient thoroughly, keeping in mind the possibility of central pneumonia; examination, Negative. Chills were repeated daily, followed by a rapid rise, profuse perspiration and normal temperature. After fifth or sixth chill, the relatives and friends wanted to know, which was quite natural, the cause of the chills. I told them I did not know. It was a picture of cryptogenetic septicaemia. In the meantime, the blood and all the excretions and secretions had been examined with negative results.

Consultation was asked for: Dr. W. S. Thayer of Johns Hopkins' University, was invited in consultation. After a

complete and exhaustive examination, Dr. Thayer concluded, with myself and my consultants, that we had a picture of cryptogenetic Septicaemia with an undefined causal location. We agreed to treat patient symptomatically and await development.

At this time, three weeks after onset of illness, the physical examination of patient was as follows: liver was slightly enlarged. Spleen somewhat large. A few coarse rales at the base of both lungs, abdomen distended, plenty of gas; stools very fetid.

ATTEMPTS AT A DIFFERENTIAL DIAGNOSIS.

(1) Malaria: Repeated examinations for malarial parisites —Negative.

(2) Typhoid Fever: Three tests at intervals for Widal reaction—Negative.

(3) Para-Typhoid: Agglutenation test (Cushing's Paracolon—7)—Negative.

(4) Septic pneumonia: About fourth week septic pneumonia developed; at first a limited lobular pneumonia, which gradually spread, involving the whole left lower lobe; this seemed ample to account for clinical picture. In ten days the pneumonia cleared up, but septic picture continued.

(5) Acute Ulcerative Endocarditis—The possibility of an acute ulcerative endocarditis was constantly in mind, especially did it seem probable when septic pneumonia developed but heart sounds remained normal and were clear and distinct practically until time of death.

(6) Abscess of Liver—Stools were searched for Ambae Coli, as well as blood and mucous, frequently, with negative results. Liver was somewhat large at times, but the size did not progressively increase. During last ten days of illness, liver decreased in size. Palpation and percussion showed liver about normal in size—no pain, nor friction sounds over Hepatic region; no jaundice: stools and urine normal color.

(7) Pyaemia—The first blood count after septic picture

developed gave a leucocytoses of 12000; second count 18000; third count, about 16000; made at intervals of three or four days.

Blood culture made with blood drawn from exposed median basilic vein in media of neutral peptone bouillion and litmus milk gave absolutely negative result; in fact, cultures remained sterile.

No local abscesses nor pain anywhere.

Prostate gland examined—Negative.

(8) Intestinal Toxaemia: Patient commenced illness with chill followed by vomiting and diarrhea. From onset until time of second chill patient suffered from a great deal of abdominal pain, distension and some tenderness over sigmoid flexure; stools very fetid. This condition continued off and on during the entire illness. It did not respond to intestinal antiseptics, but it did to elimination from nourishment of every form of proteids, except fermented milk. On a diet of practically baby food such as barley water, arrowroot rice water, alternated with fermented milk, the abdominal symptoms subsided and the stools became normal.

Chills and septic picture continued.

(9) Brain Abscess or Tumor—Considering a mastoid eighteen months before, for which mastoid process was cleaned completely out, followed by an open granulating wound, my colleagues and myself gave due attention, not only to the possibility but the probability of a late brain abscess in one of the silent regions of the brain. The patient did not complain of headaches nor were there any focal signs or symptoms, no tenderness over mastoid. Examination of eye grounds—negative; in fact, they were normal in every detail. Head from clinical viewpoint—negative.

(10) Carcinoma of Stomach.—Patient forty-eight hours before death vomited a number of small clots and a good deal of coffee ground material. Report from Laboratory strongly suggestive of Carcinoma. No tumor felt. Nothing could be found from a surgical standpoint.

DIAGNOSIS.—At death, cryptogenetic septicaemia. Cause and location undefined.

COMMENTS.—Here we have a case—a man of prominence in his community and in the financial world, surrounded by every loving kindness and the best of nursing and every facility that modern medicine and surgery provide, aided by the full use of one of the best equipped laboratories in the country, in charge of a notably accomplished and competent Bacteriologist and Pathologist, Dr. V. H. Bassett, not only well trained, but schooled by nature for original research work. Every facility was at hand to definitely locate the pus which we felt necessary to evacuate. Patient made a brave fight for nine weeks. Our efforts were really constant, unfailing and I believe, well directed, but unavailing. It did demonstrate, with much regret, how, when we most desire it, we are unable at times to come to a definite and helpful conclusion.

Malaria, Typhoid and Para-typhoid—Negative.

Septic Pneumonia—A complication.

Ulcerated Endocarditis—No Cardiac symptoms.

Abscess of Liver—Constantly thought of; liver not large; no pain nor jaundice.

Pyaemia Septicaemia—A lencocytosis, but not an increasing one; blood culture—negative.

Intestinal Toxaemia—Seemed rational diagnosis, but septic picture continued after intestinal symptoms subsided.

Brain Abscess—Brain abscess in silent region seemed rational and probable; no headache; looked in vain for focal signs. Eye men gave us no aid; eye grounds showed no oedema, congestion or pressure symptoms of any kind.

Chest—Was practically negative after septic pneumonia cleared up, except some moist rales over lower part of both lungs due to hypostatic congestion.

Chills—Patient had 56 chills, all told, varying in severity; coming at no definite intervals; at times two in twenty-four hours; occasionally, one in 48 hours. Toward the latter part of illness, patient missed chill for four days. There was always a rise of temperature, 102.5—104.5, followed by profuse perspiration and normal temp.

Once in a while, the chill, rise of temperature and fall would only consume about 6 hours.

This is a most interesting and instructive case. I am very anxious to have the case and differential diagnosis freely discussed, for surely one feels the want of a definite diagnosis, especially as the condition of the patient during and after each of the 56 chills was alarming, not only to patient, but relatives, friends and physicians.

TREATMENT.

The treatment was symptomatic. The truism held good here as elsewhere. No treatment without diagnosis.

AUTOPSY.

Autopsy examination, 3-25, 1909. Partial examination only.

Body emaciated, skin pale, slight jaundice. Abdominal cavity clear except for slight, easily torn adhesions over left lobe of liver and spleen.

Stomach dilated, filled with blood clots and coffee ground material (congestive hemorrhage), mucous clear.

Spleen large, soft, with multiple miliary abscesses.

Liver not large, surface clear and smooth—on deep section multiple abscesses filled with thick, yellowish pus. Largest abscess about 5 cm. with necrotic walls, posteriorly and below, near caudate lobe. Speigelian lobe worm eaten with abscesses. Abscess cavities radiate from these areas into both right and left lobes. Vessels clear. Gall bladder and ducts clear.

COMMENTS ON AUTOPSY.

When abdomen was open, the liver was to all appearances normal in color, size and condition. The abscesses were deep seated, giving no physical signs of condition of liver, which condition was ample to account for in every way the picture of cryptogenetic Septicaemia. The illness was inevitably a

mortal one; no medication, serum or surgical interference would have helped the existing condition.

LABORATORY REPORTS FROM CLINICAL SPECIMENS.

PUBLISHED THROUGH THE COURTESY OF DR. V. H. BASSETT, CITY BACTERIOLOGIST.

BLOOD.

(1) Widal Test—Feb. 1, 1909—Negative Dilution 1-40, no clumping, organism actively motile, 1 hour.

(2) Agglutination test—Para-typhoid—Feb. 1, 1909. Negative (Cushing's Paracolon), 1 hour, no clumping, motile, 1-40.

(3) Widal Test, Feb. 9, 1909.—Negative Dilution 1-40, 1 hour, no clumping, motile.

(4) Blood Exam., Feb. 2, 1909. Examination of fresh blood for parasites, negative. Leucocyte count, 12,500 per cmm.

(5) Blood Exam. for parasites Feb. 5, 1909. Negative for malarial parasites. Differential leucocyte count, Feb. 5, 1909, Jenner stain.

Polymorphonuclear neutrophilic leucocytes	88.4	per cent.
Large mononuclear	7.00	" "
Transitional mononuclears	1.4	" "
(6) Small mononuclears	4.8	" "
Mast cells	0.4	" "
Eosinophiles	0.6	" "
Myelocytes	0.4	" "
	100.00	" "

500 cells counted.

(7) Blood Exam. differential count, Jenner stain, Feb. 9, 1909.

P. M. N.	79.4	per cent.
L. M.	4.8	" "
Tr.	0.4	" "
S. M.	15.0	" "
Eosin	0.8	" "
M. Z.	0.6	" "
	100.00	" "

Leucocyte count—17,580 per cmm.

(8) Blood Culture—Feb. 19, 1909.

Mass cultures 15 cc. blood, taken from median basilic vein, underaseptic. Precaution (1) in 600 cc. neutral peptone boullon; (2) in 600 cc. litmus milk.

Both negative 3 days, at 37½ degrees C.

Contral plate cultures in agar also negative.

(9) Widal Test Mch. 1, 1909.

Negative dilutions 1/40 and 1/100, no clumping actively motile, 1 hour.

VOMITUS.

(1) Examination of Vomitus Feb. 23, 1909.

Vomitus, 95 cc., clear yellowish fluid and brownish food particles.

No blood—acid odor.

Free Hydrochloric acid, negative—Congo red paper.

Lactic acid present, carbo-ferric chloride test.

Total acidity, low.

10 cc. filtered stomach contents are neutralized by 3.00 cc N/10. Caustic Soda solution.

Microscopic exam. negative, no yeasts, no sarcina, no Oppler-Boas. Bacilli, a few small bacili single and in pairs.

(2) Exam. of vomitus, March 22, 1909.

Coffee grounds vomitus 2-3 oz. with cylindrical blood clot.

Free HC1 negative, Congo red paper.

Lactic acid positive, small amount. Carbo-ferric chloride test.

Microscopic exam.

Blood and blood pigment abundant, numerous Gram staining diplococci, a few large Gram staining bacilli, occasionally in chains—4-6.

(1) Feces. 19.

Feces.

(1) Exam. of Feces, Feb. 19, 1909.

Soft brownish unformed fecal specimen, no blood or mucous.

Negative for blood.

Negative for amebæ or other parasites or ova.

(2) Exam. of feces, Feb. 23, 1909.

Large, soft, brownish specimen, unformed.

No blood, nor mucous.

Negative for parasites or ova.

Sputum.

(1) Sputum exam., Feb. 5, 1909.

Muco-purulent specimen—no blood.

Stained specimen's Ziehl-Neelson Stain, negative for tubercle.

Stained specimens, dilute carbol-fuchsan and gram: negative for B. influenzæ.

Numerous diplococci, gram-positive, lance shaped (M. Lanceolatus).

(2) Sputum exam., Feb. 9, 1909.

Muco-purulent, blood stained, prune juice specimen.

Stained specimens, numerous, lance shaped, diplococci, gram positive with capsules cultured in milk and identified as M. Lanceolatus.

(3) Sputum exam., Feb. 12, 1909.

Muco-purulent sputum, negative, for tubercle bacilli.

(4) Sputum exam., Feb. 27, 1909.

Muco-purulent specimen negative for tubercle.

(5) Sputum exam., March 11, 1909.

Muco-purulent specimen negative for tubercle.

URINE.

(1) Ehrlich's diazo test urine, Feb. 1, 1909.

Diazo test negative, foam colorless.

(2) Urine specimen special, Feb. 6, 1909.

100 cc. clear, grows turbid on standing, with sticky purulent sediment in small amount.

Specific gravity 1,028, highly acid.

Albumen, positive, small amount.

Acetic acid and heat test, turbid, then flocculent ppt.

Nitric acid ring test, distinct, narrow white ring at point of contact, diffuse rings above.

Speigler's test, narrow white ring about 1 mm.

Sugar, negative.

Fehling's test, slight reduction but not with diluted urine.

Nylander's test, slight blackening, not typical for sugar.

Gmelin's bile test, negative, no play of colors.

Blood test, Guiac, negative.

Micro. exam. Negative for bacteria, a few small hyaline casts, 2-3 large granular casts. One large cast containing kidney epithelium, many cylindroids and mucous filaments.

(3) Urine exam., Feb. 27, 1909.

Morning specimen 3 oz. dark amber color—clear.

Specific gravity 1,020, reaction acid to litmus.

Albumen, moderate amount, too little to estimate.

Acetic acid and heat test, positive, deeply turgid, then floc. ppt.

Nitric acid ring test, narrow, diffuse, white ring.

Speigler's test, 1½ mm. ring, white.

Sugar, negative—Fehling's solution not reduced.

Micro. exam., no bacteria—many cylindroids and a considerable number of small hyaline and finely granular casts. A few large casts containing epithelium and red blood cells. A few leucocytes and red blood cells in the sediment.

Discussion.

Dr. St. J. B. Graham, Ellijay: According to the work of Musgrave and Strong, in the Philippines, the amœba coli differs from the amœba of dysentery in that it doesn't produce experimental dysentery in animals; it differs as a frog differs from a toad. In the majority of cases of abscess of the liver following tropical dysentery the abscesses are deep-seated, almost impossible to diagnose. They are so deep-seated, in fact, that the septic absorption kills the patient before the diagnosis can be made. I saw a case two or three years ago of a sailor from Rio, Brazil, on whom a post-mortem was held. The man had been through Baltimore and New York and consulted many doctors. He was picked up in a certain place and accounted for as a common drunk, rushed into a hospital where he was operated upon for abscess of the liver. It was too late; the abscess had ruptured into the peritoneal cavity. The main point to bring out in this subject is that the condition is usually deep-seated without much pain on physical examination. The patient doesn't seem to suffer from any localized pain on the right side, but more from a septic condition. Inequality of the pupils and their reaction to light may throw some light on the cerebral abscesses, but to localize the pain is almost impossible.

Dr. C. M. Rakestraw, Savannah: Among a series of cases I operated at the New York Polyclinic, there was one case very obscure in its symptomatology. A post-mortem examination disclosed a general infectious heptitis with suppuration in the ducts and gall bladder. The question arose in this case whether it would have helped us to examine the stools for liver cells. I was criticised at that time and have remembered it ever since.

Another very important thought has occurred to me in view of the intestinal inflammation caused by the hook worm. Is it not possible for this inflammation, or its products, to reach the liver and gall ducts in the same manner that other germs and parasites do, and cause liver abscess?

A careful study of the intestinal contents in these cases of obscure infection would in all probability solve many of their problems.

Dr. L. M. WARFIELD, Savannah: This case illustrates to my mind what makes the profession of medicine so interesting. Here a man has every means for making a diagnosis and yet it is impossible in such an obscure condition and even the pathologist at autopsy at first takes out a liver that looks normal and then finds an abscess. Sometimes in a case of malignant endocarditis the heart seems to be normal so far as physical signs are concerned. The case is interesting in more ways than one. I think there was no culture made from the liver abscess. I know myself from having been in the city at the time the difficulty that was experienced in getting an autopsy at all. Personally it has taught me many things and we must all have the feeling that a case such as this well presented is more instructive to us than any number of papers read on general medical subjects.

Dr. T. J. CHARLTON, Savannah: Earlier in the session we had an illustration in the discussion of tuberculosis of the delicacy with which diagnosis could be made even in lung involvement. That is something of which the science of medicine is justly proud. Here in this case we have an illustration of the other side of the picture, where a man whose diagnostic skill is the equal of that of any in the country, with a laboratory and every resource, meets a condition which it is impossible to diagnose. It is true there were symptoms that pointed to the liver, but there was nothing more than a suspicion. Cases of this character teach us a great deal. We are dealing with the most complex organism that exists, the most uncertain, and at best medicine must be an uncertain science; it can never be as exact as mathematics. All these cases carry their own lesson.

Dr. V. H. BASSETT, Savannah: I had the pleasure of working with the Doctor in this case. While we can not claim that a diagnosis was made, we did consider the question of abscess of the liver. By laboratory aid we were able

to exclude typhoid and malaria. We knew there was an abscess somewhere from the leucocytosis and high percentage of polymorphonuclear leucocytes. We had a very limited opportunity for examination post-mortem and I began to fear that we were not going to find anything. We excluded the pancreas and the gall bladder. We had an infection clearly coming from somewhere in the abdominal cavity. Failure of blood cultures is not unusual in infections localized in this way.

Dr. J. E. Paullin, Atlanta: A case of this character, so well studied and in which every possible attempt to find the cause and location of the disease, is always exceedingly interesting; particularly when presented in such an able manner. Few of us are willing to speak of our inability to correctly diagnose those cases coming under our care, particularly when accompanied by a post-mortem record.

This case but illustrates the difficulty often experienced in making a correct diagnosis of an obscure condition and brings to my mind a similar case which I recently saw with Dr. Cyrus W. Strickler of Atlanta. A man about 40 apparently in perfect health complained of intense pain over the right eye, extending upwards over the forehead for a distance of about two inches. Naturally it was concluded at first that this was a simple neuralgia. The condition persisted; he was seen by Dr. Stirling and it seemed probable that his right antrum was diseased; this was explored without relief and without finding sufficient cause for his trouble. Morphia as well as other drugs failed to relieve the pain, hot applications proving of more benefit than these drugs. When first seen his leucocyte count was 14,000, with a percentage of 89 polymorphonuclears: the next morning the count was 16,000, same percentage of polymorphonuclears. A third count showed 15,000 leucocytes. Only at the onset was there two degrees of fever; when I saw him his temperature was normal, pulse rather slow, about 40 to the minute, but regular. About the third or fourth day of the disease he developed a slight ataxia of left arm; the diagnosis was then fairly evident. An operation was advised for brain abscess. The con-

sulting surgeon did not agree, the man died thirty-six hours later. An abscess of the right frontal lobe was found which contained an ounce of pus from which the streptococcus was isolated in pure culture.

Dr. RALSTON LATIMORE, Savannah (closing): The blood examination made about a week after the initial chill showed 85 per cent. polymorphonuclear leucocytes. Blood examination a week later showed 79 per cent., a decrease of 6 per cent. Vomitus occurred about three days before the patient died, contained blood and looked as if it might be stomach contents from carcinomatous stomach. We found post-mortem that this was due to hemorrhage from congested condition of the mucous membrane. Examination of the feces for amæba was negative. Sputum was examined repeatedly for tuberculosis, no tubercle bacilli found at any time. During the septic pneumonia the sputum showed the marked prune-juice appearance. Patient had for four or five years a chronic kidney condition with albuminuria, but urine cleared up and kidneys did excellent work during the entire nine weeks of illness.

HOW SHALL WE CLOSE AND WHEN SHALL WE DRESS OPERATIVE WOUNDS?

BY WILLIAM PERRIN NICOLSON, M. D., ATLANTA.

The various methods of technique adopted by indivdual surgeons; the varying means of closing wounds; the different suture materials employed; and the different times and methods of dressing, present a very confusing array for the students and practitioner, which added to the fact that many text-books do not go into details in these matters, intensifies the confusion of the situation. Thus each student, seeing the different methods of his instructors, is compelled in the end to wrestle out the problem in the forum of his individual experience. Could some more uniform lines be laid down, it would greatly serve to clarify the atmosphere surrounding the subject.

With the many methods of closing the deeper portions of wounds, I shall not attempt to deal, but shall confine myself to such dealing with the skin incision as I consider may conduce to the comfort, peace of mind, and safety of the patient.

Since nature should be our guide, and the assisting of her efforts ever be our aim, we would lay down the proposition that the ideal condition for healing would be a clean-cut wound, whose edges are approximated without artificial support, and closed with a scab of dried blood serum, to remain undisturbed until union is firm and complete. While we can very infrequently attain to this ideal, we must admit that next to this would be the coaptation of wound edges, with an artificial support, free from bacteria, and removable by absorption after its functions have been performed, having in the meantime remained under its covering of dried blood serum, unmolested. With this I claim we can easily attain by the proper use of catgut sutures.

I can but believe that the condemnation of catgut as a skin suture has been unmerited, and certainly due to the want

of experimental investigation. The claims made against it are, first, being an organic and absorbable material, it is a fruitful culture medium for such bacteria as may be entangled within it from the skin. Second, the possibility of its too early absorption, and giving away of support to the wound surfaces; third, that by its swelling, it may cause pain. (Crile.) An experience of over ten years, in which catgut has been exclusively used in skin closures, has convinced me that these objections do not exist in fact, and that catgut is as safe for skin work as any other material, and is the ideal suture, because it does not have to be removed. If the skin is not traumatised by chemical disinfection, or the destructive nail brush, and its cleansing is limited to the use of soap and water and alcohol, it will safely take care of catgut.

If such be true, what can we not save the patient in peace of mind, for who does not know with what horror the average human being looks forward to the removal of stitches? The method of closure is of course subject to the preference of the surgeon, whether interrupted, continuous, lock-stitch or sub-cuticular. Personally, I am unalterably attached to the continuous or sub-cuticular closure, believing that they more accurately approximate the skin edges, and maintain a more even support than any other. For general use, I know of nothing equal to the continuous catgut stitch, taken at long intervals of from half to three-quarters of an inch, and not too tightly drawn. In any wound where the surfaces are very extensive, as in breast amputations, strain or tension points may be secured with a suture of silk worm gut. In through and through abdominal incisions, I always guard the wound with two or three stitches of silk worm gut, goind down to, but not through, the peritoneum. Wounds closed thus with continuous suture present conditions found with no other method. Skin edges, for some distance, lie in accurate apposition, without any pressure whatever to interfere with the circulation; at the same time, loosely enough to permit drainage to take place. Should it become necessary to evacuate serum at any time, a director can easily be passed between

the edges without disturbing the other part. By no other method can so few punctures of the skin be made in securing the apposition, such a wound as a hernia being frequently closed with three or four stitches.

Coming to our second question, when a wound is closed, how and when shall it be dressed? Here we find a wide difference of opinion. Personally, I prefer that the gauze next to the incision shall be loosely fluffed up, because we get more even and elastic pressure, and at the same time, secure a more even distribution of the wound drainage. As a friend of mine puts it, "you open your handkerchief before you blow your nose." A sufficiently voluminous dressing should be applied over all to take care of the drainage, as well as possible. The surgeon's part in handling the wound should, in my opinion, now cease, and it should not be again disturbed until it is healed, provided that nothing occurs to show that things are not going well. Decreasing soreness and pain, with normal temperature, are positive proofs that all is well. Should the dressings be saturated with blood serum the next day, it is not a necessary indication of changing them, because when they dry out, we have nature's ideal support of dried aseptic blood serum, and the splinting of the wound thus effected, makes it an ideal support. No good can come from useless prying into the wound, and I care not who dresses such a wound for the next succeeding days, there is an opportunity for infection, even if it does not take place, and I do not believe that circumstances justify such an infinitesimal risk, if it can be proven to be unnecessary. The argument that it conduces to the comfort of the patient, which is not proven, is not a valid one, because we operate primarily for the patient's safety, and not his comfort. The claim that it gives an opportunity for readjusting skin edges, and loosening stitches that are too tight, does not apply, because the edges are not liable to turn if they secure the even support of stitches in the primary closure.

If catgut sutures are used in the skin, the wound should not be dressed until the tenth day, when it will be found completely healed, and the knots will come away, the stitches

having been absorbed. If the catgut should in the meantime have been absorbed, the dried gauze will act as a splint that will hold the skin edges firmly together. Should supporting stitches of silk worm gut have been employed, they should be removed from the fifth to the seventh day, as they happen to cause irritation. The dressing following this should remain until healing is complete.

The presence of a drainage tube, or a wick of gauze, for drainage in clean wounds, is not an indication for changing dressing, for such may remain a week or ten days, and the remaining granulating tract will close under succeeding dressing. The patient, upon the day succeeding a painful and serious operation, I am sure will find great comfort in the knowledge that there is nothing to be done, and would certainly dread a painful dressing for the purpose of removing a harmless drain. Suppurating cavities, such as an acute appendicitis, gall bladder or empyema, I believe should be dressed only as saturation of the gauze requires. The daily removal of such dressings, the removal of gauze drains, the irrigation and repacking, are unnecessary, and do more harm than good. The necessity for irrigation is a confession of insufficient drainage. The employment of peroxide of hydrogen in suppurating cavities is dangerous in many instances, harmful in all, and the greatest of all retarders of healing. The removal of gauze drains upon the second day, as is practiced by many, is a fearful ordeal, and often produces more shock than the primary operation. This I consider nothing short of barbarous in the extreme, especially when we consider that upon the fourth or fifth day, when detached from the tissues by granulations, it can be removed with but little pain. I think that every surgeon who pulls out gauze drains on the second day, should have one extracted from him, in order to remember how it feels. A personal experience in this taught me much humanity.

To sum up, I would say that in my experience, the ideal closure of clean wounds is the catgut suture, continuous or sub-cuticular, introduced at as long intervals as is compatible with accurate apposition, and left under the original dress-

ings until wound healing is complete. Frequent dressings, unless called for by evidences of wound trouble, are unnecessary, are fraught with some danger, and deprive us of one of nature's strongest allies, the support of the wound by its own serum. They are dangerous in that each dressing affords renewed opportunities for wound infection, which can not take place if dressings are undisturbed. I am a firm believer in leaving our wounds to nature after we are through, and assisting her in carrying out her wonderfully planned designs, and not meddling with them. I believe that thus we will secure in the end the greatest satisfaction and greater comfort and safety to the patient than by any other method.

Discussion.

Dr. Floyd McRae, Atlanta: I think so much of Nicolson that I never miss a chance to disagree with him and I could not let him read a paper like this without taking issue with him; I think he is wrong in part. If we could have ideal conditions, if we could always close our wounds clean, if we knew there were no germs in them, then that would be all right, but that is not the case. We do not operate under ideal conditions: we do not close our clean incisions free from bacteria. All laboratory observations have proven this. The closure of the deeper structures has not been gone into, it is only the skin the Doctor has mentioned. The weak point in our surgery to-day is our own skin and the skin of our patients. You can not clean your hands with any degree of certainty, nor can you clean with any degree of certainty the field of operation; that is definitely known. Now that being true, we should not close the skin incision with a continuous suture. Of course, we may and do get good results with any method. I do not believe the catgut is to blame, but the method of using it. As to the comfort of the patient, I have tried it personally and on patients and while I do not operate primarily for the comfort of the individual, I do consider that a factor and if I can do anything to contribute to the patient's comfort I feel it my duty to make that contribution.

I believe every skin incision should be closed from within out. I like catgut but I want a needle at each end. The intercuticular suture cuts right in to the hair follicles and sebaceous glands and is thus a possible source of infection. As a routine thing, I think it a mistake to use continuous sutures. The interrupted suture put in from within out and tied loosely is the best. If you accurately approximate the edges with the continuous sutures you do not leave the same opportunity for the small amount of serum in the wound to get out. The argument he makes for leaving on the dressing is, I think, unsound. I believe the comfort of the patient is greatly enhanced and you can see whether the condition of the wound is good. Often there will be a little tumefaction; it is true this serum will be absorbed, but it may become a source of some danger.

Dr. H. M. Lokey, Atlanta: I never do a mastoid dressing, even in acute mastoiditis, before the fourth day after operation unless there is a rise of temperature or chill. As a general rule, if the operation is well done, there is no occasion for re-dressing until after the third or fourth day. I never use moisture in any form in post-operative dressings. I do not irrigate but simply cleanse the wound with a dry piece of gauze. By leaving out moisture and not using irrigation the cases do better, because every bit of moisture introduced into the wound adds that much to your culture media.

Dr. G. R. White, Savannah: Like every one else I have my own ideas about these things, which are pretty well fixed by this time, but I must say my experience agrees with Dr. Nicolson's in every particular. In 1888 Halsted introduced the sub-cuticular suture; in 1891 I first saw it used by Dr. Fowler and I have not departed from its use since. I cover the wound with a little collodion on a piece of gauze afterward. Should there be any trouble you can learn of it by the patient's temperature and pain, then it is time to look at the wound and pass a probe down between the sutures to let out the serum or put in a drain if necessary. Regarding the other part of the paper, I also most heartily commend it. I agree with him about peroxide of hydrogen. It is a danger-

ous thing and a thing that is used too much. People think when they make a lot of bubble and fuss they must be doing good, when in reality they are doing harm. I take a little glass pointed syringe that holds about one ounce and inject a little sterile water and in that way you can do no harm.

Dr. W. P. Nicolson, Atlanta (closing): Of course I recognize that what Dr. McRae said is true, that we can not absolutely sterilize the skin. Though we have worked together so much, there are a few points upon which we will never get together, I suppose. Any man is going to have trouble with his wound sometimes, and if he says he doesn't he is not telling the truth. When I get it I don't spend my time hunting the man that made the catgut, but just charge it up to the general cussedness of things. I must admit that I am one of the men that rarely operates in gloves. I am not in line with most surgeons in that I know, but I feel that I can do better work without them. As far as the continuous suture is concerned, it has served me well and unless something comes up to make me take a different view, I shall continue to use it. I do not say a patient's comfort should not be taken care of, either, but a little dry dressing I don't consider causes much discomfort. Absorbable sutures for the skin are what I prefer. Chromocized catgut has to be taken out like silver wire.

THE PROPHYLACTIC TREATMENT OF THE PSYCHICAL RESULTS OF SURGICAL DISEASES.*

BY C. M. RAKESTRAW, M. D., SAVANNAH.

So rapid has been the progress of surgery in technic; so great the inventive skill employed to devise new methods of overcoming diseased conditions; so engrossing has been the material advance, that we have almost forgotten the primal reason for the existence of surgery. The belief that it is the tendency of nature to cure every condition, after the anatomical cause of its development have been removed, has been the means of burdening many an individual with a life scarcely worth the price of living. A study of the physical and psychical disability which may follow operation has awakened us to an appreciation of new responsibility to our patients, and we now must acknowledge our operations imperfect until all the symptoms of disease have been removed.

What constitutes a complete surgical cure?

There are three great factors to be considered in the correction of a surgical affection—the psychical, the physiological, and the anatomical—any one of which will, if neglected, mean a measure of failure for the operation.

So it becomes necessary for us to stop from time to time in our eager search for original methods of operating; forget the material aspects of our science and reflect on the questions which concern the destinies of our patients in an economic, domestic and political way.

What is, then, our highest duty to our patients; or, in other words, in seeking relief, what concerns them most?

The most important part of a being is his individuality. For it is upon its expression he must draw for his success in life and the sum of the joy of living that is to be his lot. Functional nerve disorders interfere with the expression of a man's individuality, every such abnormal condition involves his thought, becomes an obsession, confuses his intellection;

therefore, the paramount reason of his search for relief is to be freed from a process that hampers his highest activities. He cares little for nice dissections or the consummate art of surgery, and measures the value of the service rendered by the degree of the joy of living restored to him. Therefore it is a fallacy capable of greatest consequences for a surgeon to believe that his work and duty to his patient is done as soon as the wounds have healed.

To help us to a better understanding as to what the psychic symptoms concomitant with and consequent upon a surgical disease are, I can not do better than to quote Dr. James G. Mumford, of Boston. In a very able article entitled, "Post-operative End-results," published in the *Annals of Surgery* last June, he says, "Psychical results are related to the subjective mind. Their bearing upon the cure concerns the patient not in the proportion to anatomical perfection or to potential and intellectual capacity; and just so far as his subjective intelligence is feeble or has become enfeebled, just so far is he fated on the one hand to remain a wreck, or on the other hand to refit his shattered being. It is to the ultimate prognosis we must look. It is not what we are, it is what we think ourselves to be. That is the sum total of the whole argument."

There is a psychical factor in surgical conditions that influences the intellectual faculties of the brain in as real and effective a manner as do pain and loss of function. Worry, insomnia, headache, neurasthenia, psychathenia, hypochondriasis, when coincident with a surgical disease, are as much a factor in the consideration of means to cure that condition as pain, bleeding or any of the other material symptoms.

Dr. Howard Kelly says: "Mistakes are perhaps more frequently made in connection with the diagnosis of the functional neuroses than in any other part of medicine. In thousands of women the true diagnosis is entirely overlooked, and these patients are transferred from specialist to specialist, who treat their reflexes and sometimes do more harm than good by concentrating the attention of the patient upon her symptoms by making local applications. On the other hand,

those who are impressed with the psychic elements of the case, unless they are very careful in the exclusion of organic disease, may through their efforts to treat the general condition, overlook important local causes which have been responsible for the origin of the nervous symptoms, which will persist until they are removed."

The surgeon is the one pre-eminently suited to treat the psychic features of his cases. Before and after operation he has perfect control and can direct the nerve treatment without drawing the patient's attention to her nervous condition in the least. He can isolate her, put her under perfect rest control, keep all sympathetic friends and relatives from her by simply assuring her that it is part of the general preparatory and post-operative treatment. Then again, he is the one above all others in whom the patient has the most perfect confidence, for her attitude in taking the anæsthetic, submitting while unconscious to a procedure of which she has but the faintest conception, represents the most passive state of mind imaginable. And it is this state of mind which is essential to success in the eradication of abnormal impressions and psychic disorders.

In operations on the generative organs of women we are confronted with the gravest problems of this subject. For these involve the ideality of the domestic relationships of wife, mother and husband. There are few things in life more disturbing to the feminine mind than the consciousness of disease of her generative system. It involves her views of life in general. Her emotional nature being most intimately connected with her sexual activity, her most sacred sentiments of motherhood and wifehood are involved. She is possessed of a sense of a clean, healthful, feminine vigor of which is born a confirmation, innate or educational, that disease of her generative system entails the loss of her distinctive traits of femininity. This evil clouds her future with direst portent; then worry drags in melancholia, insomnia, neurasthenia, psychasthenia; she is weighted with mental fatigue, she lacks intellectual and muscular endurance, and she is tired all the time. There is a darker picture yet if her power

of procreation is not dead or allowed to be passive, for she marks with neurotic stigmata her offspring. Certain French writers have recorded a number of instances where several generations have suffered from the contamination of neurotic stigmata engendered by a parent undergoing merely a temporary attack of a curable nerve affection.

Here as in every other department of surgery and medicine it is necessary to make at least a partial diagnosis before the disease can be treated intelligently.

Hysteria, hypochondriasis and neurasthenia are well-known affections which will not be considered here, but there is another of equal importance which you may find of interest.

In 1903 Dr. Janet, of Paris, published a book on "The Obsessions of Psychasthenia," in which he describes a group of symptoms closely related to those found in cases of hysteria and hypochondriasis. The psychasthenic will always describe her own symptoms; she makes her own diagnosis. She has obsessions which she realizes are groundless, but which she cannot rid herself of. She will explain most graphically the extreme effort of will she must always exert to overcome hysterical tendencies. She is continually at war with her thoughts, she will have an idea that some of her organs are out of order, yet she will acknowledge that she is well aware that it is only a notion, that the organ is healthy, but she can not help thinking that it is not. The bladder is the most common sufferer from this symptom, and if the surgeon overlooks his patient's psychasthenic tendency he will aggravate her case by treating the bladder and concentrating her attention on it. She differs from the hysteric in controlling her emotional tendencies and from the hypochondriac in being certain that her organs are not diseased, in knowing that her thought is not based on fact. The psychasthenic will show a gradually increasing dislike for exertion and exercise, she does not like her surroundings, and she feels that it is the atmosphere of her home that is making her dissatisfied. She tires on the least exertion, avoids company, is readily bored, and develops a habit of day-dreaming. She may lose all love interest in life, and whereas she was formerly very affection-

ate she becomes distant and cold toward her dearest relations. She may become arrogant and overbearing and show a decided desire to control the destiny of others, developing into a veritable "Hedda Gabler." It is these women who readily become engrossed in the literature of mysticism, they revel in the plays of Maeterlinck, Sudermann, Hauptmann and Ibsen. They crave the strongest emotional excitation.

These cases suffer all manner of phobias; they fear cancer, all forms of disasters, they even fear that they might become criminal and commit all manner of crimes themselves.

A careful study of the family history of the psychasthenic will disclose heredity as a strong etiological factor. A neurotic mother or a father addicted to drink occurs so often as to impress one with the deep and far-reaching effect of nervous affections and prove to us the great harm that can come of a physician failing to warn his patients of the sorrow and disaster that can come to a family and its progeny by neglecting the hereditary effects of nervous disorders.

Here, as elsewhere, the best work in connection with the treatment of these cases is in their avoidance, and that is the real meaning of conservative gynecology. On the other hand, the failures in gynecology are almost entirely psychic failures.

In a series of ninety-one cases, all of which had been dismissed from the hospital as cured, Dr. Mumford, of Boston, found 33 per cent. psychic failures. Dr. Howard Kelly, in a study of a series of anatomical successes, found 37 per cent. psychic failures. With the disastrous results following the destruction of a woman's generative system in view, all manner of methods are being devised to save these organs and preserve their functional integrity. In the past the saving of life seemed to be surgery's highest aim; the greatest surgeon was he who could, with rapidity and skill, dissect among vital organs and delicate structures, carry a case along the very brink of eternity and avoid death. The individuality of his patient was sunk in the pathology of a disease, and instead of being a creature of intellect and emotions, was a case of this or that disease, the woman with the tumor, the woman with a tube. It is no wonder surgeons impressed the world

with the idea that their highest purpose was to cut skillfully and to make wonderful advances in anatomical and biological science. But now we are beginning to advance our biological findings to the higher functions of the human economy, we are beginning to realize that the purpose of the human frame is to house a "Great Within." In saving tubes and ovaries our object is something more than to merely save the sexual delights of life or the office of procreation: in saving a uterus we are attempting something more than the preservation of the menstrual function or the prevention of a premature menopause. We are saving the intellectual life, the emotional life, and are regulating the sensory nervous system so that the various gland functions will not be interfered with. Think for a moment of that little twig of the sympathetic plexus that breaks itself off the parent stem in its embryologic hour and tucks itself away up there on top of the kidney—the suprarenal gland. This small body secrets a substance that is necessary to every moment of our lives. When it is removed from the body of an animal, the animal will die sooner than if its kidneys were removed, while 1/800 of a grain of its active principle will make a strong man uncomfortable by raising his blood-pressure by contracting the minute muscles of the arteries and arterioles. By the preservation of the tissues of the generative system we are endeavoring to avoid disturbances of the great sympathetic nervous system that regulates and harmonizes the glands and organs of the body. C. Martin is quoted by Dr. Kelly as saying that: "It is probable that the ovaries, like the liver and thyroid gland, modify the blood circulating through them, and add to the blood some peculiar product of their metabolism. It may be that some of the climacteric symptoms are due to the loss of this substance from the system."

We observe psychic phenomena in all chronic inflammations of the uterus and adnexa: salpingitis, endocervicitis, endometritis, ovaritis, cystic degeneration of the ovary, ovarian prolapse and uterine displacement. "In the monistic conception," says Paul Debois, "man is an entity; he is only a functioning organism, reacting under the influence of innumerable

stimuli. The body is entirely composed of cells. Therefore, no one of these microscopic organisms is capable of spontaneous activity. The cell does not act, it reacts; the total absence of stimuli would mean physiological death." "And the brain itself," he continues, "this king of our organs, which imperiously controls the whole army of muscles, is passive. The cerebral cell has no more spontaneity than the muscular cell has no more spontaneity than the muscular cell, but it is more sensitive and delicate; it is a more expert workman and capable of performing a more varied task. It acts only under the influence of stimuli, of secret impulsion of organic sensations, or stimuli which are received by our sense organs, those fine antennæ which bring us into relation with the outside world. Fading impressions, the results of former stimuli, continue in the form of dreams in sleep which seems to be cerebral death." He means here that stimuli when not of sufficient strength to awaken the conscious mind still have an effect on the subconscious.

"Sensations arise in the organism from the depth of our being, incited by the functioning of an inferior center, which is itself always reflex. Here is the source from which arise numerous obscure motor impulses of the sensibility, which also determine our reactions when we do not oppose them by the superior motives of reason."

In diseases of the female generative organs we observe all manner of erratic sensory and emotional actions caused by the disarrangement of the normal stimuli and impulsions. A uterine displacement, a prolapsed ovary, means a constant trauma to the nerves and vessels. Many women suffer post-operative nervous troubles, or are not relieved of them, because proper plastic work has not been done and the remaining organs placed and stitched in their proper locations. It is harmful surgery, from a psychological standpoint, when it is necessary to remove both tubes to leave the uterus without support and to allow it to sag and fall about the pelvis unhindered. Such cases complain that they feel that their insides are falling out. In view of what Dr. Debois says, it is plainly evident that such conditions will be the cause of ner-

vous affections that can originate from *abnormal* stimuli sent to the brain.

Therefore, the best treatment here as elsewhere lies in prevention. A torn cervix, a lacerated perineum should be treated as we do flesh wounds in any other portion of the body, that is, as soon as inflicted. Prolapse of the ovary and uterine displacements should be corrected as soon as discovered; and in all cases the psychic aspects of the case should be given particular attention.

That this is part of a renewed interest and activity in the problems of psychology is plainly evident on all sides. That it is one of the greatest subjects of the hour no one can doubt; why our science should have neglected the study of psychology as part of the regular college curriculum is not a mystery, but is one of the harmful effects of ultra-specialism combined with a blind worship of authority. The Emmanuel Movement, Christian Science and other quasi-sciences have plainly shown the disastrous results of this neglect and error, and our profession is at last awakening to its grave responsibility.

The University of Wisconsin has established a chair in Psychology; the Phipps fund of $500,000 will shortly be available for a similar course in the University of Pennsylvania; and Dr. Weir Mitchell will throw the weight of his name and personality into its inception. Dr. G. Stanley Hall offers a series of free lectures on the same subject at Clark University this winter and Dr. Morton Prince has started a course in psychology at Tuffts.

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Discussion.

Dr. Martin Cooley, Savannah: I think Dr. Rakestraw's paper is an intelligent exposition of the popular trend of gynecological surgery. It has been too long the custom to operate upon these patients and to discharge them as cured. These patients are not cured; the neurologists can tell you that. It is not a cure to cut out an ovary or correct a devia-

tion of the uterus. You must take into account the organ's function. Is the patient feeling well after the operation, and is she a useful member of the family? These women run the gamut of the operators. The oculist has a chance at them and then the stomach man and then the genito-urinary man, and finally the pelvic surgeon, and when they get through there is not very much left of them. It depends largely upon the honesty and judgment of the surgeon. The best general rule to follow is that unless the pelvic lesions are giving trouble—unless you know absolutely that this is the case, don't operate on the patient. Don't operate, above all, on the pelvic organs with the idea that you are going to relieve a neurosis. If you have a grave condition, of course operation is indicated. In this day it is necessary to take into consideration the mental element. We must treat the patient, not the disease, as I said this morning in discussing Dr. Charlton's paper.

Dr. ST. J. B. GRAHAM, Ellijay: There is a good deal in hypnotic suggestion; what it is I do not really know myself. About seven years ago a lady came to see me who was suffering from hystero-epilepsy. She had a beautiful voice which was being cultivated by a vocalist. The patient had blunted fingers, long nails, blue eyes and stigmata of degeneracy. The ovaries had been removed. I asked her to try hypnotism and she said that had been tried but failed. I asked her to try again. We tried the mirror for one day with failure; we tried crystal gazing another with failure; then we sat down and had a heart to heart talk and in fifteen minutes she was asleep and the suggestion was made that she would become better and better as the days went on. And she did. Finally, this patient was to sing at an entertainment. She came to my office and asked me if I could hypnotize her and then wake her up and let her sing. We did it and she sang that night. Her subconscious mind sang, with her eyes wide open, though I do not believe she saw a bar of the music.

Dr. G. R. WHITE, Savannah: I think the discussion of a subject of this kind does us a great deal of good. We learn from text-books the different methods of operation but we lose

that elusive factor of the patient herself, and when the subject can be brought before us in this impressive manner it is very instructive. The practical point of the paper is that of diagnosis. Don't be satisfied when you find a little filament somewhere wrong, but take into consideration the patient's mentality and the nervous condition. We must not miss the psychic element. The older writers used to speak of the art of medicine as distinguished from the science of medicine, and that distinction holds good to-day. The artist makes his picture by a little touch here and there, by a rule that he can not describe. It is an art. And so with these patients. We must treat them with medicine as an art, and you can not do it by any one method; it is the combined art of the whole subject of medicine. If we do not do it, the Christian Scientists and the Osteopaths will.

Dr. C. M. Rakestraw, Savannah (closing): The above illustration is of a case where a portion of the uterus was removed for a puncture, the left cornu during a curretage for the treatment of puerperal septicæmia. Instead of removing the entire uterus the necrosed tissue alone was excised. I have employed this method of conservatism in eighteen cases due to rupture and other causes, four of which died. Where no more than one-fourth of the uterus is involved this method is preferable to a complete hysterectomy. I have never curetted a uterus in this condition and am a strong advocate against it. By saving the uterus we prevent all those disagreeable symptoms incident to a premature menopause.

FRACTURES: EXTENSION IN THE TREATMENT OF FRACTURES; ITS APPLICATION IN BARDENHEUER'S CLINIC IN COLOGNE.

BY GEORGE R. WHITE, M. D., SAVANNAH.

Gordon Buck, of New York, in 1864 introduced a new principle in the treatment of fractures by using weights attached to the limb by adhesive plaster in order to correct the overriding of the fragments due to muscular contraction. Phillips, another American surgeon, modified and improved Buck's method by adding lateral traction by means of weights in order to overcome displacement of fragments after the shortening had been corrected.

Buck's method was popularized on the Continent largely through Von Volkman, until it became there, as in this country, the accepted method of treating a fractured thigh. About thirty years ago Bardenheuer, of Cologne, became convinced of the correctness of Buck's and Phillips' principles, which he believed should have more extensive application than for the fracture of the thigh; and for over a quarter of a century he has worked with the persistency characteristic of the German, in applying it to all fractures, which he has done so successfully that his results in the treatment of fractures are probably unexcelled anywhere, and his Clinic has become celebrated all over the world.

In his Clinic one sees no plaster of paris casts, wood and metal splints, nor any of the usual retention apparatus. Whether the fracture be of the finger or of the thigh, all are treated according to the same principles.

Not only is traction applied to the long axis of the limb, but lateral displacement and volation are corrected by separate tractors, so that one broken limb has from three to six weights attached exerting traction in many different direc-

tions. As these forces are acting constantly to keep the fragments in place, no retention splints are required, and the patient can move about in bed and move the limb a little without displacing the fragments.

For fractures of the arm and hand where it is not desirable to keep the patient in bed, Bardenheuer has devised special splints which exert both axial and lateral traction by means of springs and give all the advantages of extension, without confining the patient to bed.

The advantages of extension when properly applied are:

(1) That it holds the fragments in perfect apposition by constant acting forces, so that the limb can be moved a little without displacing the fragments.

(2) The limb is left open for inspection and X-ray examination which should be made as soon as the fracture is put up and every week or two thereafter, and should any misplacement be found, either immediately after applying the apparatus or later, it can be corrected by simply changing the weights without disturbing the rest of the apparatus.

(3) The function of the limbs conserved in that massage may be begun at once and passive motion begun early.

(4) The interfragmental pressure is relieved, thereby preventing pressure atrophy, the most common cause of nonunion. In over 10,000 cases of fractures of the shaft of a long bone treated by extension, not one has failed to unite.

(5) Union occurs with small callous formation, avoiding nerve and joint complications.

(6) Gangrene and ischaemic contracture from swelling of the limb under a tight retention splint can not occur when this method is used; and fatty emboli caused by the sharp point of one fragment breaking up the medullary cavity of the other does not occur if the fragments are held in place by sufficient extension.

In the application of extension, the principles of the old Buck apparatus are followed in the main.

The mattress must rest upon boards and not springs.

The weights act over pulleys, and are attached to the limb by means of bands of stout adhesive plaster which do not

stop at the fracture, but extend up the limb to the origin of the muscles causing the overriding. In a fracture just above the knee, for example, the plaster would extend to the top of the thigh. The adhesive strips are kept from slipping or "crawling down" by circular turns of thin porous adhesive plaster applied to the whole limb, except over the joints.

The weights are of iron, which are much more accurate and satisfactory than sand-bags, and can be increased and decreased readily. Considerable study has been devoted to the determination of the amount of weight required to correct various deformities, and is found to be more than was generally supposed to be necessary.

To overcome the muscular contractions when the thigh is fractured, as much as fifty pounds is often necessary, but this can be decreased after a few days.

Counter extension is made by raising the foot of the bed about twelve inches, which renders a perineal strap unnecessary.

Recently the adhesive plaster has been discarded in favor of the canton flannel strips stuck to the limb by a 40 per cent. solution of Venetian turpentine in alcohol, which is sprayed on the limb by a DeVilbriss atomizer, a common nasal spray, and before it dries the woolly side of the canton flannel applied and held in place by a roller bandage. Enormous weights can be attached to these strips without slipping and with no irritation to the skin. They absorb the perspiration and the balsam acts as an antiseptic, so that they remain sweet and clean after being worn many weeks.

Only a few of the special fractures can be mentioned in our limited time. These are described briefly and the method of applying the apparatus is illustrated by a number of dolls to whose limbs miniature weights are attached, pulling in various directions.

For fracture of the thigh at the middle with the lower fragments pulled in and the upper fragments pulled out with overriding, a weight of 50 or 60 pounds is used to overcome the shortening, the foot of the bed being raised about twelve inches for counter extension. A pillow is always placed under

the knee to partially flex it and prevent the over-stretching of the posterior ligaments with the resulting stiffness. This is a detail never to be omitted. A nine pound weight is attached to a band about the thigh above the fracture and hung over the side of the bed so as to pull the upper fragment in and a similar weight pulls the lower fragment out.

The patient is allowed to sit up in bed, move about a little and take gentle exercise with the arms and body. The weights are removed in six weeks and the patient kept in bed about ten weeks. The apparatus as applied here overcomes the usual source of failure met with in the use of the ordinary Buck apparatus. The weight is sufficient, reaching as high as 60 pounds, and applied early, before inflammatory action and rigid contraction of the muscles render correction of the overriding almost impossible; the canton flannel straps do not irritate the skin and do not slip; lateral displacement is corrected by suitable tractors; the knee is flexed, protecting the posterior ligaments from strain. The fragments are examined after the apparatus is in place and any misplacement corrected; the body and arms are left free to move about and the general welfare of the patient looked after. The apparatus requires some skill to apply and some patience to keep adjusted, but among those who have mastered its details there are no advocates of the routine wiring of simple fractures of the femur. The results of this method in simple fractures of the femur are uniformly good. Certain cases of fracture of the neck of the femur are put up in abduction and a 50-pound weight attached holding the leg out at an angle of 30 degrees or more. I saw two patients who had been treated by this method, walking about the hospital; one was seventy-six and the other eighty-one years old.

For a Potts fracture, four weights are used. One is attached to the leg as high as the knee and works over a pulley as in the Buck apparatus, except that no stirrup is used and the adhesive straps press the sides of the ankle together. Another weight is attached to adhesive strips fastened to the plaster and dorsal surfaces of the foot and acts over an overhead pulley and elevates the foot. One lateral tractor pulls

the knee inward and another fastened just above the ankle pulls the leg outward, causing an inversion of the foot. We then have traction elevation, and inversion of the foot, which fulfill the classical indications for treating this fracture, and in addition these forces are acting constantly and the fracture can be inspected or X-rayed at any time.

In fractures of the arm and hand, Bardenheuer has devised splints which carry out the traction principle without confining the patient to bed. The splint for fractures of the humerus makes traction in the long axis of the bone by means of a spiral spring using a leather shoulder cap as a point of resistance and corrects lateral displacement by bands about the arm which also exert pressure by springs. The patient can move the arm a little without displacing the fragments. After the eight or tenth day it is taken off a little while daily and the arm exercised and the splint replaced.

Besides holding the fragments in accurate apposition, this splint overcomes the interfragmental pressure which is the most common cause of non-union, and since the employment of this splint, no case of non-union has occurred.

Fractures into the elbow-joint, which, according to Scudder, always leave some deformity, are treated, it is claimed, with perfect results, both as to position and function by a splint with three sets of springs which act upon the flexed arm, one pulley in the axis of the humerus, one toward the fingers, and one back toward the olecranon. The same splint has an attachment for applying the traction principle to the wrist, forearm and fingers.

His efforts at making similar ambulatory splints for the leg have as yet been unsuccessful, though others on this side of the Atlantic are claiming good results from them.

The ideal method of treating fractures, according to Bardenheuer, is not attained by a simple retention apparatus, but by one which, besides maintaining accurate apposition of the parts by constantly acting forces and allowing constant inspection, also conserves the function of the limb by relieving the interfragmental pressure, and allowing early active and passive motion, and massage. These ideal conditions can

only be fulfilled by the application of Buck's principle of extension in the treatment of fractures.

Discussion.

Dr. T. J. Charlton, Savannah: The paper which the Doctor has just read is, I think, one of the most valuable contributions we have had at this session. The tendency in America to-day to the cutting down upon and wiring of fractures is, I think, a rather reckless tendency. It is well to consider this modern form of an older method, the method of Buck. There has been of late years a very marked tendency to cut down and wire. While it must be admitted that in the hands of a man of exceptional technique the danger is practically nil, yet on the other hand it tempts men less perfect in technique to resort to this method by the brilliancy of results and thus tends to increase amputations and loss of life. It is possible with this extension method to correct fractures without deformity and with no danger.

Dr. C. M. Rakestraw, Savannah: In the treatment of a fracture a complete knowledge of its pathology is essential to a perfect result. While the ex-radiograph furnishes all that is necessary in most fractures, in that condition known as Potts' fracture it not infrequently fails to disclose the most important structures injured. Besides the separation of the fragment of the internal maleous from the shaft and the break through the fibula, there is torn the internal lateral ligament, the annular ligament, the tibio-fibular ligament. The displacement of the internal maleous and rupture of the annular ligament not infrequently throws the tendon of the tibialis posticus muscle, the chief support of the arch of the foot, out of its groove, that runs beneath, and behind the internal maleous under the annular ligament. If these structures are not restored and the tendon replaced in its normal groove flat foot, permanent crippling, pain and weakness of the ankle joint is the inevitable result. Therefore, these cases of Potts' fracture can only be relieved by the open operation. This consists of the removal of clots and debris

from the line of fracture between the maleous and the shaft restoration of the tendon to its normal groove and repair of the torn ligaments with kangaroo tendon.

But here, as in all surgical conditions, there is a time to operate and a time when not to operate. If there is much extravasation of blood, much bruising, it is necessary to wait until the products of inflammation have been absorbed and the tissues regain their normal vitality; for it is upon the physiological resistance of tissues to infection that clean healing largely depends.

After such repair fixation with the properly applied splint is all that is indicated.

Dr. W. A. NORTON, Savannah: I agree with Dr. Charlton in his discussion. I think that as a last resort only should we cut through the tissues and into the devitalized muscles, where you are almost sure to get infection. The silver wire brings the bone so firmly together, too, as to cause pressure necrosis. I think in cases of fracture, with the one exception of Potts' fracture, we should use the method which Dr. White advocates, that of extension. Put on plenty of extension and relieve the pull of the muscles, and after the rigid muscle relaxes the weights can be reduced.

Dr. G. R. WHITE, Savannah (closing): I am very much interested in Dr. Rakestraw's apparatus for fracture of the femur. The Germans have tried that method and given it up as a failure, as I said in my paper. The method of letting the patient get up and around is ideal, but is difficult to carry out. With this method, not only is traction exerted, but the parts are open for inspection at all times, which I think is a great thing in the treatment of fractures. With my apparatus and with Dr. Rakestraw's you can see what is going on all the time.

TREATMENT OF THE SENILE PROSTATE.

BY FLOYD W. MCRAE, M. D., ATLANTA.

Mr. President and Gentlemen of the Medical Association of Georgia: It is not my purpose to go exhaustively into the treatment of enlarged prostate; but to bring before this body of practical men, the essentials. While I believe as firmly in the operation of prostatectomy as it is possible for any surgeon to believe, and while I appreciate fully the benefits of this operation, I do not urge the operation as the only proper treatment for the senile prostate.

In the earlier stages of this disease, much can be done, complications prevented, and prostatectomy avoided by appropriate treatment.

I shall only take the time to call attention to this treatment in the most cursory way.

When an enlarged prostate first manifests its existence by a feeling of heaviness and weight in the perineum, with a slight increased frequency of urination, moderate discomfort following micturition, its possessor needs to be given detailed instructions and painstaking treatment. Keeping the bowels well open, drinking plenty of water, avoiding stimulating drinks and articles of diet, and excesses of all kinds, together with urinary antiseptics, will prevent altogether in some, and postpone in almost all cases, the necessity for a complete prostatectomy.

When, however, the urine becomes cloudy, urination frequent, the rest at night broken, disturbing the general health and nutrition of the individual, the time has come to consider prompt, radical surgery. Or where the patient, after some excess, such as a full course dinner with drinks and cigars, is seized in the night with a sudden desire to void the urine and inability to do so, necessitating catheterization, and ushering in, not infrequently, "catheter life," the operation of prostatectomy is frequently indicated.

Nothing is better established in surgery, than the fact that infection of the bladder, chronic cystitis, stone, ascending infection of the ureters, pyelitis, one or all will sooner or later ensue upon the establishment of "catheter life."

Prostatectomy for enlarged prostate, is an operation now firmly established by experience. No operation in surgery is more satisfactory or gives greater relief, when well done in properly selected cases.

This is true in both the perineal and supra-pubic operations. I believe with Deaver, and many other good surgeons and anatomists, that it is the least destructive of important structures. I believe further, that while the immediate mortality, according to collected statistics, is greater following the supra-pubic operation, that the permanent cures are many more, and the comfort of the patient following the operation much greater than follows the perineal operation.

My personal observation of perineal cases, while not large, has been that more discomfort follows the Young operation than any other type of perineal operation. It can, however, never be classed as minor operations, good as are the results in the hands of competent surgeons in properly selected cases.

Many of the published statistics in a long series of selected cases without mortality, are very misleading. Every surgeon has runs of good luck and good cases in almost every department of surgery, which are often preceded and followed by disaster and mortality.

There is no longer any doubt about the relief that may be obtained for the victims of enlarged prostate, often the good old fathers, useful men, by either the supra-pubic or perineal operation in suitable cases. Nor is there any question but that both of these operations have particular fields of usefulness. It is not my purpose to advocate the advantages of any particular operation; but rather to urge watchfulness, prompt diagnosis on the part of the family physician and early operation in properly selected cases.

I most earnestly advocate the performance of the operation of prostatectomy before the victim has been worn down by the continued effort to empty his bladder; before the bladder

has been permanently injured by chronic inflammation; before surgical kidney supervenes; before stone and cancer are induced by the damming up of the urine, due to the enlarged prostate; before the vessels become atheromatous; before the bronchial mucous membrane becomes diseased owing to imperfect urinary elimination; before the development of uremia and sepsis.

The difficulties of prostatectomy are greatly magnified in the mind of the general practitioner, and the danger of hemorrhage, sepsis and exhaustion following the operation much exaggerated. Personally, I do not believe I could have amputated as many arms in patients in similar conditions to those on whom I have done prostatectomy, with larger percentage of good results. Nor have I seen more complete and old men take on new lease of life; are as happy as boys, and in a large percentage of cases, have no further urinary difficulties. One of my early prostatectomies, where I also removed a large rugged stone from the bladder, several months after complete recovery, and during six years following the operation, went through a prolonged case of typhoid fever, double pneumonia, and a radical cure for strangulated inguinal hernia operation, without the necessity of catheterization in a single instance, or any urinary difficulty whatsoever.

The danger of hemorrhage during and following this operation, is not great, if proper operative technique is practiced. I have never met with serious bleeding during or following a complete prostatectomy. Freyer, of London, has shown that the danger of hemorrhage comes from tearing the large veins immediately underneath the mucous membrane, and outside of the proper capsule of the prostate. My experience coincides with Freyer's, and is in harmony with his observation.

We can not hope to relieve as many of these good old men as have a right to be cured, until we lay down our pre-formed prejudices, and approach these cases with open minds, enlightened by the recent experiences of careful surgeons everywhere.

The proper selection of anæsthesia is very essential. I

usually prefer ether; but where there is much bronchial irritation, it is better to give chloroform, or, better still, nitrous-oxide and oxygen.

Drainage is absolutely essential to good results.

INJURIES OF THE URINARY BLADDER: REPORT OF CASE OF EXTRA-PERITONEAL RUPTURE.

BY W. A. NORTON, M. D., SAVANNAH.

From the broad scope of the subject of injuries of the urinary bladder, it is obvious that I can only touch upon certain of its phases. The injuries received during labor, from accidents during operations, or from penetrating wounds, such as gunshot or stab wounds, will not be discussed in this paper. My desire is to give an idea of the relative infrequency of *rupture* of the bladder, and to report a case which occurred recently in my own practice.

The urinary bladder is so well protected by the bony pelvis as to render its injury extremely uncommon, and it is only when distended with urine and in accidents of the most unusual character that rupture of the bladder occurs. Bartels states that among 10,867 surgical cases treated at Bethany Hospital in eight years, only three (3) cases of bladder injuries were seen, and in 16,711 surgical patients admitted to St. Bartholomew's Hospital between 1869 and 1875 (six years), there were only two (2) such cases.

Ninety per cent. (90%) of cases of rupture of the bladder occur in the male sex, and the number of *intraperitoneal* ruptures greatly exceeds those which occur extraperitoneally. Indeed, Bartels collected only 49 extraperitoneal ruptures out of 169 cases. Age and urethral stricture are two very important factors.

Ruptures of the bladder may involve the whole thickness of the bladder wall, or only the areola and muscular coats, leaving the mucous lining intact. Von Bergmann states that if the rent occurs posteriorly the mucosa, areola and muscularis will tear, while the serosa may hold. Such a form of rupture is called a subperitoneal one.

The amount of urine which escapes under such circumstances depends upon the nature of the rent.

It seems to be an accepted fact that if the rent is small, and the bladder contains only a little fluid at the time of rupture, the urine may escape, drop by drop. Under such circumstances the extravasated urine sometimes becomes incapsulated—adhesions form about the wound,—it closes and the patient recovers. That only two recovered out of 80 cases which did not receive surgical aid, shows the rarity of recovery (only one patient in 40 stands a chance for recovery without surgical intervention).

There is little new under the sun; these injuries are as old as recorded time. The same problems confront us to-day which presented themselves to the ancient Greeks,—such injuries were known and feared when Menelaus and his band of heroes stormed the walls of Troy.

In an article in the *Annals of Surgery*, by Drs. Fowler and Evans, we find the following:

"Injuries of the bladder were described in the earliest times. Thus Homer in the Iliad refers twice to this accident as rapidly fatal, and the well-known aphorism of Hippocrates, 'Cui persecta vesica lethalis' (an injured bladder is fatal to any one), has been often quoted to show that wounds of the bladder were considered by the ancients as being invariably fatal. Aristotle distinctly states that injuries near the neck of the bladder heal; and Galen records a case of recovery from wound of the bladder, and commenting on the aphorism of Hippocrates contended that the idea conveyed by him was not that these wounds were necessarily fatal but ALWAYS dangerous. One of the most important and exhaustive contributions in recent years was that of Dr. George A. Otis, who, quoting Larry, one of the earlier writers on the subject, said that while all accidental injuries of the bladder were serious, those produced by shot were less dangerous than others, probably due to the nature of the wound, which was less favorable to urinary infiltration into surrounding tissues. Perhaps the most complete collection of cases of bladder injury was that of Max Bartels, 76, but the statistics in his article may be taken to represent results before the modern methods of surgery. Prompt surgical intervention has done wonders in

this as in all abdominal conditions. Bartels found that fracture of the pelvis occurred 109 times in 179 cases, and he gives three possible causes of rupture of the bladder, (1) a blow of a hard object received in the region of the bladder, example, blow of a fist or kick of a horse; (2) fall from a height by which a patient is thrown prone upon the ground; (3) direct injury produced by pressure of some heavy object upon the pelvis, example, passage of a cart wheel or crushing of patient between the buffers of two cars. The third seems the most frequent cause. In the second and third causes of injury, the bladder rupture is associated with fracture of the pelvis. Von Bergmann states that acute alcoholism is said to lessen the elasticity of the bladder and so may act as a predisposing cause of rupture. The diagnosis of rupture of the bladder is not so easily made, for the subjective symptoms are often slight, and Senn states that this is especially so in persons under the influence of liquor. Von Bergmann distinctly says that the patient may pass urine voluntarily because of the fact that the rupture did not involve the entire thickness of the bladder wall until later. Under the above conditions diagnosis can only be made by laparotomy.* Usually the patient suffers from shock, and in certain cases the shock is so severe that consciousness is lost, and death ensues. As a rule the patient is not able to pass urine, though he may have a constant desire to do so. There is pain over the lower abdomen and rigidity of the muscles. Hemorrhage and an empty bladder are the symptoms most relied on.

A condition which can be easily mistaken for rupture of the lower portion of the bladder is traumatic rupture of the urethra posterior to the peno-scrotal junction. Here, however, the extravasation of blood and urine takes place in the perineum, but may eventually extend into the perioneal cavity, therefore a free opening through the perineum is the clear and urgent demand."

The treatment is at all times *immediate surgical intervention*. Allow me here to present a case of rupture of the bladder which occurred in my practice recently.

L. G., aged 24, male, was injured by being caught between

two logs at a lumber mill. He was hauled four miles to town and placed in a hospital. Upon his arrival he manifested rather severe shock and complained of great pain all over the lower abdomen. The abdominal muscles were rigid. He could move his legs only a very little and suffered excruciating pain upon the least attempt to do so, claiming the greatest pain to be deep in the groin. As he could not pass urine voluntarily he was catheterized and a half teaspoonful of blood escaped from the deep urethra, but after entering the bladder, clear urine passed (about eight ounces being obtained).

Owing to the clear urine I thought that the bladder had escaped serious injury. He was ordered catheterized every five hours. His bowels moved well the afternoon of the injury, no blood appearing in the stool.

On the morning of the third day his temperature ran up to 103½. The abdomen was tympanitic and pain was severe over the lower abdominal area. After consultation it was decided that immediate operation was indicated. A median incision was made and on reaching the peritoneum a large hæmatoma was found, extending from the bladder wall nearly to the umbilicus, and bulging up at the bottom was the thin mucous lining of the bladder. The muscular and areolar coats of the bladder had ruptured, but the mucous membrane was intact. This, however, ruptured as soon as the hæmatoma was lifted. The whole anterior wall of the bladder appeared dark in color, and seemed for the most part devitalized. An attempt was made to sew up the bladder, but the stitches pulled through the tissue. I finally succeeded, however, in sewing it up in three tiers, but left the lower part of the rent open for a tubal drain. In attempting to get up the hæmatoma, the peritoneum, which was dark, mushy and friable, was easily torn. No pus or fæcal odor appeared in the peritoneal cavity,—but it was deemed advisable that a large drain be placed in the lowest portion of the peritoneal cavity for the purpose of establishing a free outlet for any urine escaping from the bladder.

The patient was put in the exaggerated Fowler position

and a retention catheter was introduced through the urethra into the bladder. The urine nearly all drained through the supra-pubic wound and soaked the dressing, and for three days escaped through both peritoneal and bladder drains.

There being no pus, on the third day the peritoneal drain was removed, and the wound healed rapidly. About the time the peritoneum closed, a violent cystitis set up, and the retention catheter was almost constantly clogged with pus and thick mucus. The bladder stitches all sloughed out on the sixth day, and the urine escaped almost entirely from the supra-pubic wound. The patient complained so much of the retention catheter that it was discontinued. But a small soft catheter was inserted for the irrigation, hot boric acid solution being used twice daily. Portions of the bladder tissue were washed out by each irrigation. The patient was also given 10 grains of Urotropin every four (4) hours. The violent cystitis continued and about the eighth day I began irrigating the bladder with formaldehyde solution, one dram to the pint. The cystitis improved as soon as the formaldehyde was begun. I continued to irrigate with this solution and pack iodoform gauze around the supra-pubic tube until the wound closed. This it did by the end of the seventh week. On April 4th the patient was able to retain 7 ounces of urine without much discomfort.

The interesting features of this case are, 1st, the severity of the bladder injury without presence of blood in the urine; 2nd, rise in temperature, without presence of pus in the peritoneal cavity; 3rd, the fact that the peritoneum showed no ill effects from the urine which soaked into it for three or four days; 4th, the great loss of bladder tissue without marked disturbance of function, for, judging from the number and size of the particles of bladder tissue washed out by the irrigation, I can not but believe that the greater portion of the anterior wall sloughed out.

In the Johns Hopkins Hospital Bulletin, January, 1908, Dr. Mitchell reported a case of fracture of the pelvis complicated by extra-peritoneal rupture of the bladder, successfully

treated by operation and the continuous tub. He mentioned two similar cases treated in that way, one by Rose, '91, and one by Weissinger, '96.* The tub bath was used in these cases to insure more perfect drainage of the extravasated urine rather than for the bladder itself. In the case treated by Rose the rupture was intra-peritoneal and was caused by a cart wheel; it was complicated by fracture of the pelvis. An interval of forty-eight hours elapsed before the abdomen was opened. The recovery in this case is remarkable in that it is the only case of intra-peritoneal rupture on record in which the operation proved a success after so long a time. Dr. Guy L. Huner, of Johns Hopkins, in the *A. M. A. Journal*, December, 1907, speaking of the advantages of the tub and continuous irrigation in bladder cases, says, "I consider the tub and continuous irrigation very valuable accessories in cases of cystitis. Its praiseworthy features are numerous. It makes the patient comfortable, it saves an incalculable amount of labor. It is the only means by which the bladder and surrounding tissues can be kept clean in infected conditions. This is the treatment largely in vogue at the Johns Hopkins Hospital. They have bath tubs mounted on trucks which can be carried to the bedside of the patient. The patient lies on strips of canvas which are stretched across the top of the tub, and held in position by brass clamps. With this the patient can be covered and made comfortable and a continuous irrigation can be carried on by a syphon leading from a gallon vessel placed on a table beside the tub. We all know how an entire ward of a hospital can be made almost uninhabitable because of the stench of bladder cases and it seems to me the tub is a great advantage in these cases."

In conclusion: Is, or is not, the permanent urethral drain desirable in bladder cases? In the majority of instances it sets up a violent catarrhal inflammation, causes trauma and increases the virulence of, or makes virulent, the micro-organisms which normally inhabit the urethra.* Another baneful

* Withdrawal of penis from the vagina before ejaculation.

influence of the retention catheter is that it causes pressure ulcers.

If, therefore, it can be avoided, frequent catheterizations are far more satisfactory.

TREATMENT OF CHRONIC PROSTATITIS.

BY ALFRED L. FOWLER, M. D., ATLANTA.

Chronic prostatitis the most frequent, the most persistent, and also the least frequently recognized of all the complications attending gonorrhœa.

Our earliest description of this affection dates back to the year 1815, when Lognean first described chronic inflammation of the prostate as a gonorrhœal complication. And many years elapsed before any special attention was directed to the disease.

In a treatise on involuntary seminal losses, twenty-one years later, Lallemand pointed out the improvement observed in these cases when treated by posterior instillations and hygiene. He was the first to comprehend the connection between mental and nervous diseases as associated with lesions of the prostate and seminal vesicles. Deslandes, a year later, and his observations were shortly verified by many others, became convinced that *coitus reservatus*,* masturbation, ungratified sexual desire and other venereal abuses were etiological factors in chronic prostatitis.

No accurate knowledge of the pathology of the prostate was known until 1838, when Verdier conducted, upon a patient who had long suffered from symptoms of chronic prostatitis, the first autopsy pertaining to the disease. Up to this time the lesions of the prostate and seminal vesicles were not only confounded but they were pretty generally regarded as identical. The findings that were disclosed as a result of this autopsy served to partially explain the confusion.

Careful clinical observations and subsequent researches in this particular branch have cleared up all the apparent contradictions and the independence of the two diseases, vesicu-

* A sort of capillary action exists and the Smega Bacillus, Colon Bacillus, Staphylococcus Aureus, Staphylococcus Alba and occasionally the Streptococcus and Pseudo Diphtheria Baccillus find their way along the wall of the retention catheter into the Bladder.

litis and prostatitis, has been established. The researches instituted by such noted urologists as Albarran and Guyon, of Paris, Finger, of Vienna, Oberlander, of Dresden, and Young, of Baltimore, have largely increased our knowledge of this disease, both clinically and pathologically.

That this disease is by far more common than was formerly supposed is now pretty generally admitted and its more frequent recognition is due largely to our more precise methods of diagnosis.

Anatomy.

Just a word regarding the anatomy of the prostate. First of all it is essentially a glandular organ, situated below the bladder and tunnelled by the posterior urethra. Two elements enter into its composition:

I. A fibrous connective tissue framework, and unstriped muscular fibers; and

II. Glands, composed of compound branching tubules lined with secreting epithelia ending in short ducts.

The glandular tissue of each lobe consists of twenty or more distinct tube system, each tube system being drained by an independent duct. The ducts from the lateral lobes enter the posterior urethra in the groove on either side of the verumontanum, while the ducts from the middle or posterior lobe enter between the verumontanum and bladder. This explains how readily the gonococcus invades the prostate.

These narrow ducts or tubes, which have their tiny openings in the floor of the posterior urethra, after a course of about 1 cm., pass outward into the lobules whence they divide into repeatedly branching tubules, and expand into the terminal alveoli. By reason of this complicated anatomical arrangement the least disorder results in imperfect drainage from the numerous follicles, and this is why chronic prostatitis lasts so long, and frequently is so difficult to cure.

The arterial supply is from the small branches of the inferior vesical and the middle hemorrhoidal. The vessels of supply enter the periphery of the gland at various points and

break up into small capillary networks that surround the alveoli. The venous supply is very abundant. The sensory nerves of the prostate, somewhat extensive, are derived from the tenth and eleventh dorsal segments, first, second and third sacral and the five lumbar nerves.

In the vast majority of the cases of chronic prostatitis the gonococcus is the offending organism, as is too well borne out by the astounding reports published during the last quarter century. The figures bespeak the frequency with which the disease is regarded to occur as a complication of gonorrhœa. From 40 per cent. as reported by Montagnon to 94 per cent. recently reported by one observer, with the better evidence, to my thinking, in favor of the lower figures.

While it is proper to bear in mind the cause of its greatest frequency, nevertheless we should also remember that the disease is not always due to the gonococcus. I have observed it in men who knew not what venereal diseases were, who had been reared in the wilds of the mountains and arrested there by Government officers for illicit distilling and after conviction brought to the United States Penitentiary, whence they came under my medical care at this hospital.

Because the disease occurs independently of gonorrhœa may partly explain the high percentage of cases reported by some observers, since some of their cases must have had the disease before contracting gonorrhœa. But even so, my clinical experience tells me that these higher figures are incorrect.

The prolonged congestion concomitant to masturbation, excessive venery, coitus reservatus, bicycle riding, etc., without doubt lowers the power of resistance of the tissue of the gland, and of the prostatic urethra, too, for that matter, so that hematogenous infection is rendered comparatively easy. In addition to the blood stream we have two contiguous reservoirs, the bladder constantly containing urine and the rectum its faeces. The colon bacillus is not infrequently found in the urine, while the intestine is its natural habitat. Your essayist has observed many times this organism in the secretion from chronically inflamed prostates, both with and without a history of gonorrhœa. Concerning the longevity of

gonococci opinions differ widely. Notthaft believes that none are found after three years from the last gonorrhœal invasion. Organisms causing a secondary infection, such as the staphylococcus and colon bacillus, are no doubt present for a much longer time.

Frank, of Berlin, believes that every case of posterior urethritis is complicated by prostatitis, while Kollman, of Leipsic, is of the opinion that the prostate is not always involved.

SYMPTOMOLOGY.

Chronic prostatitis develops so insidiously that symptoms, reflex, in distant parts of the body generally go unrecognized. In the author's experience the most constant symptom has been fatigue, and which sometimes amounts to a dull pain in the lower lumbar region or in the sacro-lumbar region together with lassitude and occasionally melancholia. Other morbid reflex neuroses, not infrequently symptomatic, are:

Nocturnal pollutions.	Pruritis ani.
Premature ejaculations.	Spasmodic sphincter ani.
Spasmodic urethral stricture.	Tickling at meatus.
Priapism.	Imperfect erections.
Pain in perinæum.	Pain in bladder.
Pain at end of penis.	Pain in any part of urethra.
Pain in kidney region.	Pain in groin.
Pain in testicle.	Pain in inner side of thighs.
Pain in legs and feet.	

J. Leland Boogher, of St. Louis, reports cases of astigmatism cured after prostatic massage. Prostatic conditions cause contractions of the rectal and urethral sphincters, thereby causing disturbances of the equilibrium of the sphincter sympathetic centers and a consequent contraction of the sphincter muscles of the eye. Even more curious, and a fact which has been recognized for centuries, is that certain causes pressure ulcers. Frequent catheterization is much

Among the urinary symptoms may be mentioned:

Frequent micturition.	Burning on urination.
Nocturnal urination.	Incontinence of urine.
Weak stream.	Incomplete urination.

Hematuria.

Difficult and painful micturition.

In addition to the foregoing we frequently observe the bon jour drop and prostatorrhœa either on defecation or urination. Of these the latter is the least frequent.

DIAGNOSIS.

By reason of chronic prostatitis, seminal vesiculitis and chronic posterior urethritis having so many symptoms in common a correct diagnosis can only be made by:

I. Palpating the prostate, per rectum.

II. Microscopical examination of the expressed fluid from the prostate.

Before beginning the examination the three glass test of the patient's urine should be made and the findings noted. If the first and last glasses contain Furbringer's hooklets it is pretty reliable evidence that the prostrate is inflamed. Their absence, of course, does not mean that the gland is normal.

With the patient in the leap-frog position the examining finger on palpation, if educated, detects the absence or presence of enlargement, the lobes and areas involved, whether the diseased and isolated areas are softened and putty-like or nodular and shot-like. The degree of tenderness is also noted. While a very marked involvement, with much nodular and softened areas, may be easily felt by an untrained finger, a great deal of experience is necessary to determine the finer points in the diagnosis. If the disease is limited to the prostate, there being no vesiculitis, and no perivesicular infiltration, the sharp outline of the upper border of the prostate can be distinctly felt.

After a systematic examination, the contents of the gland are expressed by actually kneading the prostate with the ex-

amining finger and the expression contents are caught in a sterile glass to be examined later with the microscope. This procedure should always be preceded and followed by a copious urethrovesical irrigation.

The color of the normal prostatic fluid varies from a grayish white or yellowish to a bluish white. Its chief characteristic, microscopically, is that it appears as a perfect solution while the abnormal secretion appears just the contrary. And for this reason the naked eye pathology speaks much to the practiced eye.

Microscopically, the normal secretion is found to contain many lecithin bodies, which are largely responsible for its color, an occasional granule cell, few columnar epithelial cells and now and then corpora amylacea. Bering states that the latter are apparently of epithelial origin and consist of calcium and phosphoric acid.

The secretion as expressed from a chronically inflamed prostate, to naked eye pathology, discloses a heterogeneous fluid. In color it varies from an opalescent white to a creamy yellow. Occasionally it is watery and flaky like the first milk from a punctured cocoanut. Usually it is thick, slimy and contains minute masses suggestive of bran or bread crumbs. It is not often that polymorphonuclear cells are found in the homogeneous fluid. As a rule the secretion is alkaline.

Microscopy, after all, is the means we must rely upon most for our diagnosis and it should always be resorted to. An occasional pus cell is, of course, without much significance. The same is true regarding the epithelia unless they are fairly numerous and in a poor state of preservation.

The unstained secretion gives a fairly satisfactory idea of the condition, but the stained specimen more so. Perhaps the simplest and most satisfactory method of staining is to first centrifugate the secretion about twice in a normal salt solution and after decanting or, better still, pipetting off the supernatant fluid stain with methylin blue or green containing about 36 per cent. acetic acid. This will stain everything except the lecithin bodies, the acid accentuating the nuclei of the other cells.

The cells first sought for are the polymorphonuclei and on their presence, so far as the microscope is concerned, hinges the diagnosis. Where there are many pus cells few lecithin bodies will be found. As improvement progresses the pus cells begin to show a decrease, while the lecithin bodies become more and more numerous until, finally, a polymorphonuclear is a rarity and the lecithin bodies are profuse. These latter are tiny round refractile bodies of various sizes, seldom as large as a red corpuscle. They appear as opalescent dewdrops and give to the secretion its pearl gray color. Chemically, these bodies are regarded as glycero-phosphate of neurin. I have attempted to stain them with Soudan III on several occasions, but the stain has always proved disappointing. Other elements observed are epithelia in various states of preservation, large and small mononuclear, granular cells and corpora amylacea. The addition of a 1 per cent. ammonium phosphate solution, provided the secretion is unmixed with urine, develops Boettscher's crystals, which are beautiful in form and whose points are dagger-shaped. It is claimed that their base is found nowhere but in prostatic fluid. Occasionally a cast from the excretory ducts is seen.

URETHROSCOPY.

The urethroscope, when introduced into the normal prostatic urethra, shows the mucous membrane to be of a vermillion or pale pink color, with smooth or somewhat striated folds. The verumontanum shows itself in the floor as a half ball. Occasionally, the tiny openings of the prostatic ducts entering the groove on either side of the verumontanum can be seen. Those from the right lobe enter the groove on that side, those from the left entering the left groove; while the ducts from the median lobe enter the floor just posterior to the verumontanum. Less frequently are seen the ejaculatory ducts which enter just anterior to the verumontanum. The appearance of these openings is very similar to the openings of the crypts of Morgagni, which are distributed along the roof of the anterior urethra. The mouth of the sinus pocu-

laris, through which or around which the ejaculatory ducts make their openings, is large and often open.

In the membranous urethra the verumontanum is continued as a more or less prominently projecting ridge of mucous membrane.

Since chronic prostatitis always means a posterior urethritis we may anticipate the change, as disclosed by the urethroscope, in this condition. The verumontanum instead of being a vermillion or pinkish red appears as a congested, succulent and purplish red ball showing granular and denuded areas. The mucous membrane not being intact it bleeds from the slightest trauma. Silver nitrate applied to these erosions turns them white. You have observed the same effect when applying silver nitrate to erosions of the buccal cavity.

The cystoscope will generally show a scarlet splotch in the anterior angle of the trigone and the bougie a boule will serve to detect the usual spasm of the external vesical sphincter present in these conditions.

TREATMENT.

The successful treatment of chronic prostatitis, even when conducted by those of experience, is not easy. Of prime importance is the recognition that each case is a law unto itself and should be handled accordingly. Over and too frequent treatment is to be carefully guarded against and as an aid we should, in the very beginning, gain the patient's entire confidence.

If we would succeed with these cases we must also recognize that diet, next to massage, plays the most important role. The latter is the sheet-anchor in the treatment. That the intestinal toxemias produce an irritating and aggravating effect in these cases there can be no question, and I have observed it in too many cases for it to be a coincidence. So I insist on these patients dieting. They are put on a bread and milk diet and directed to drink vichy. Outdoor exercise, baths and rubs after gymnasium practice together with cold

sprays upon the spine are encouraged and which have a happy effect mentally.

Pin-hole meatuses, urethral contractures, spasmodic or organic, should be relieved and varicocele, elongated or adherent prepuces and abnormalities about the rectum or anus should be corrected before beginning the treatment by massage. A urinary antiseptic such as urotropin, salol or cystogen has its place in the treatment, but the usual tonics, iron, quinine and strychnine are an abomination and a burden to the patient's stomach. An exception to this assertion is that of cases of acute malarial prostatitis.

I have not so far felt called upon to employ sero-vaccinotherapy and for two reasons. First, the writer remembers too well the glowing reports heralded in the medical press by those of sophomoric enthusiasm as new and invaluable remedies and which have long been placed at rest in the materia medica graveyard. Second, the plan I am pointing out has proved quite satisfactory in my own hands as well as in the hands of others. The serum-therapy treatment is only an adjunct, at best, and can never supplant massage and diet any more than the Feliki instrument can replace the operator's finger in massaging the prostate.

For the vaccine treatment to be of any benefit it is necessary to use a preparation prepared from the particular organism causing the infection in each individual case and not infrequently we have found in our cultures mixed infections.

The local treatment consists in massaging the prostate, the use of the psychrophore and the Feliki instrument per rectum, copious urethro-vesical irrigations after each massage and direct applications to the diseased posterior urethra.

The patient is placed in the "leap-frog" position with knees nearly extended while the operator seats himself to the rear and a little to the left of the patient. With a Morton's finger-cot well lubricated on the index finger the operator grasps the patient's left shoulder with his left hand and then inserts his gloved finger with a slight rotary motion its full length. If the prostate is high up placing the foot on the round of a

chair with the elbow pressing against the knee insures the operator even a longer reach. After entering the sphincter we can feel the membranous urethra in the median line and to the front; next in the median line may be felt the isthmus between the so-called lateral lobes while higher up we feel the well marked border of the prostate. A shallow recess on either side marks the location of the seminal vesicles and the fundus of the bladder is between them. The lateral lobes are on either side the isthmus.

Painful spots, doughy areas and isolated nodules are sought out and noted. The massage as well as the examination should be done with care and deliberation. One lobe at a time is kneaded, not rubbed, with the pulp of the index finger and subsequently pressed out with the entire finger. The degree of pressure employed will depend on the amount of tenderness found. While the whole gland is massaged we direct our particular attention to the nodules and areas of softening. In beginning the massage the outer border of the prostate is selected and our way is gradually worked towards the isthmus and after the entire gland has been dealt with the urethra is stripped and the secretion is collected for a macroscopical and microscopical examination.* A copious urethro-vesical irrigation of oxycyanide of mercury, 1/5000, completes the toilet. Generally in four or five days, if the patient has stood the treatment well, another massage is given. In those patients showing a tendency towards epididymitis longer intervals are required and a well-fitting suspensory should be worn. No attempt is made to treat these patients chronologically and the number of treatments received within a given time depends altogether on the patient's tolerance.

During the interval between one massage and the next the psychrophore may be employed to good avantage every other day. The hot current continued for 15 or 20 minutes excites an active hyperæmia that aids the absorption of the infiltration. As soon as we detect beginning softening of the nodules or that the soft areas are clearing, the hot and cold currents

* In the secretion first expressed the pus cells may be absent but after the nodules undergo softening from massage, the pus cells appear.

may be used alternately at the same sitting. This greatly stimulates the muscular fibers of the prostate and is particularly useful when neurasthenia is marked. The cooling sound, through which a current of water at the temperature of tap-water passes, is also of much service in selected cases. As soon as a sense of chilliness is produced the instrument should be withdrawn.

Going hand-in-hand with every case of chronic prostatitis is the ever present posterior urethritis and which must receive intelligent treatment. After the prostate has become apparently normal the urethroscope shows the prostatic urethra still unduly congested and which in some instances is due to verumontanum is swollen, shows granular areas and is purplish red.

While many of the morbid reflex neuroses occurring in uro-genital diseases owe their origin to the verumontanum we must not overlook the fact that such conditions as pinhole meatuses, varicocele, vesiculitis, elongated or adhered fore-skins, vesical and renal lesions also play important roles.

Where the hyperæmia is mild and the erosions of the verumontanum slight the application of tincture of iodine usually answers pretty well. If the hyperæmia is marked and the granular areas much in evidence a 10 to 20 per cent. silver nitrate application is indicated and if very severe the galvanocautery should be applied. Subsequent applications should not be made until the reaction has completely subsided, and this is true no matter what the application. Such applications must be applied through the urethroscope directly to the verumontanum.

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DISCUSSION.

Dr. CHARLES C. HARROLD, Macon: I want to question the statement that most of the bad cases had supra-pubic operations. Dr. McRae also stated that most of Young's cases had failure of closure of the perineum. He also said that Young uses the urethral catheter: when did he start using it? I

would also like to ask how long he leaves in the urethral and supra-pubic drains?

Dr. F. W. McRae, Atlanta: I did not mean to give the impression that Young's operation left more perineal fistulæ than others, but that in the cases that had come under my observation they had painful perineums and the neuralgic pains radiating down the thighs. As to the reasons why more bad cases are done supra-pubically is the complication of stone and those complicated with cystitis are as a rule done supra-pubically.

As to the after treatment of these cases, these old men should be gotten up soon. I leave in the urethral catheter eight or twelve days, irrigating through the urethra, and there is very little irritation. I use as fair a sized catheter as can be borne with comfort. I take out the supra-pubic drain in 12 hours and in some cases they go on without soiling of the dressing. Formerly I left them in longer. Now I do not hesitate to remove them on the following day. It is important to keep the bowels open, give bland liquids, prop them up and give spartein, which I think one of our best diuretics.

Dr. W. A. Norton, Savannah: My experience has been against the permanent retention catheter. For several reasons I think it should not be used if we can possibly get along without it. It sets up a catarrhal inflammation, the dressings are often found soaked with mucus, and it increases the virulence of the germs normally existing in the urethra and causes pressure ulcers. Frequent catheterization is much more satisfactory.

Dr. A. L. Fowler, Atlanta: Out of over fifty specimens of secretion obtained from the prostate in chronic prostatitis, which I sent to Dr. Paulin for examination, the staphylococcus aureus was present in 12 per cent., staphylococcus albus in 26 per cent., staphylococcus citreous in 8 per cent., and the colon bacillus in 10 per cent.: the staphylococcus aureus and coli present in 1 per cent.: the aureus and albus in 4 per cent.; citreus and albus in 4 per cent.; the albus and coli in 6 per cent. The normal prostatic secretion appears

as a homogeneous fluid, while that from the diseased gland is heterogeneous. Microscopically you see lecithin bodies, amyloid cells, epithelial cells and polymorphonuclear cells when chronic prostatitis is present.

As to massaging the prostate with the finger-cot the best plan is to begin at the outer border and work towards the median line, actually kneading the gland—no friction is made at all—we do not want to cause any irritation.

SOME INTERESTING OBSTETRIC CASES.

BY ANDREW J. KILPATRICK, M. D., AUGUSTA.

CASE I.—"Labor following ventrofixation."

Mrs. J., 36 years of age, mother of seven healthy living children, was delivered of child March, 1902. This woman was in the country ten miles from the city of Augusta, with three white midwives in attendance. At the time of my arrival, which was about fifty hours after the advent of labor, I found her generally exhausted with weak but regular uterine pains. In endeavoring to determine if the fœtus was viable, a scar was noticed in the median line between the umbilicus and the symphysis pubis. Upon being questioned as to the nature of the operation from which resulted the scar, she declared that she had "had falling of the womb and that the doctors had sewed the womb to the front of the abdomen." She also mentioned the fact that she had no unusual discomfort during her pregnancy. This operation of ventrofixation was just twelve months prior to her confinement. Vaginal examination by the usual method failed to locate the cervix or any presenting part of the fœtus. Being an unusually large woman with a very patulous vagina the entire hand was introduced, still with negative results. Upon further introduction of the hand and forearm up to about three inches above the wrist joint the index and middle fingers came in contact with the open relaxed mouth of a dead fœtus lying just within the cervical canal, which was well dilated and the membranes ruptured. Being somewhat surprised and interested in this unusual location of the presenting part, as well as in the length of the vaginal canal, the examining fingers were withdrawn from the cervix and a further vaginal investigation was made. By repeatedly and carefully running the internal examining fingers along the spinal column from the sacral promontory upwards, I determined accurately that the cervix and the mouth of the fœtus were directly opposite

and in contact with the third lumbar vertebra. By means of the fingers within the cervix and the free hand upon the maternal abdomen I learned that during uterine contractions, which as above stated were feeble, the face of the fœtus was forced against the spinal column at the lower border of the second lumbar vertebra, with a tendency to go upwards and that the buttox of the child rested against the maternal abdominal wall between the umbilicus and pubic at the site of the original scar. A tumor-like mass was noticeable to the internal examining hand lying against the anterior vaginal wall above the bladder which afterwards proved to be the thickened uterine wall and detached placenta. If any position can be assigned to this foetus it would be the first breach position, L. S. A. Having satisfied myself as to the condition present, the patient was chloroformed by one of the midwives present under my direction and version performed. The method necessary to the performance of version in this case, of course, differed from that commonly employed in the uncomplicated or ordinary case, for the reason that the cervix was pointing upward and backward above the promontory of the sacrum, while the fundus uteri was directed downward and forward. It is therefore evident that to bring the fœtus downward we must first carry it upward to get around the angle formed by the elongated vagina and ante flexed uterus. This was done by the means of the external hand upon the maternal abdomen pushing the fœtus in its long axis upward and backward, while gentle traction was being made upon the foot from within.

This case is interesting to us as physicians for several reasons:

1st. A woman can carry a child to term after ventrofixation even when the fundus uteri is so firmly fixed by adhesions that it cannot rise. 2nd. Pregnancy may continue to term without any unusual discomfort. 3rd. It beautifully exhibits the wonderful resources of nature in that the unattached portion of the uterus can take upon itself the function of the attached portion. 4th. Under the stimulating impulse of pregnancy the vaginal canal can lengthen if nature

so demands. 5th. The cervix can dilate without the force of gravity aiding, even when some of the uterine musculature is imprisoned by adhesions. 6th. It plainly shows the inability of the mother to deliver herself if the fundus remains fixed and the cervix is forced upwards, by the growing ovum above the sacral promontory, as the uterine forces direct the fœtus upward and backward across the axis of the superior strait instead of within the axis. In other words, the fœtus is propelled in a direction paralleled to the plane of the pelvic inlet instead of striking it at a right angle as is the case in a normal presentation.

Case II.—"Pulse of 40, after delivery."

Mrs. H., 25 years of age, multipara, was delivered of child February 12, 1907. She had an unusually easy labor, lasting only five hours, followed by a normal puerperium. It was noticed on every count taken of the pulse during the first hour after delivery that it was even 40 beats to the minute and remained at this rate for nearly four days. On the fifth day the pulse numbered forty-eight per minute and by a gradual increase had on the afternoon of the eighth day reached 60, which is the average pulse rate of a normal puerpera immediately following delivery. Edgar in his last work claims that the pulse rate following delivery may be as low as 36, 32, or even 30 per minute.

Numerous theories have been advanced from time to time in the attempt to explain its mode of production. Kehrer attributed the slowing in great part to the lowering of the blood pressure following delivery; Schroeder, to the sudden diminution of the vascular area after the utero-placental circulation has been abolished; Lohlein, to stimulation of the vagus or other nervous influences; and Olshausen, to the absorption of various products set free in the blood during the involution of the uterus. During the past few months the etiology of this apparently simple phenomena has been the subject of much discussion, but without solution.

Case III.—"Extraction of a living child from the ma-

ternal corpse, per vaginam, 14 minutes after the mother's death."

Mrs. C., 23 years of age, primipera, died of puerperal eclampsia on March 13, 1904. As this patient was seen for the first time only five minutes before death no treatment was instituted for eclampsia. Permission, however, was granted by the husband for an effort to be made in the interest of the child. Labor having progressed at the time of the mother's death to the extent that the fœtal head was well within the pelvic cavity and the cervix dilated to two-thirds its usual size at delivery, the anterior and posterior lips of the cervix were divided by means of scissors into the body of the uterus and the perineal muscles by two incisions each running from the vaginal fourchette to the middle of the great sacro-sciatic ligaments making an inverted V-flap of the perineum, the anus representing the center of the V. Forceps were applied and a living, healthy male child, weighing 11½ pounds, was delivered. The fœtus was asphyxiated to a considerable degree but promptly responded to the usual manœuvres for resuscitation, and was doing well when lost sight of several months after delivery.

The time consumed in this operation was about 12 minutes. Allowing two minutes to elapse before beginning the operation we may safely say that the child was in the mother's corpse about 14 minutes. Several instances are on record where living children have been extracted from 15 to 30 minutes after the mother's death. As reported by Edgar two observers, Buffon and Shierig, have taken living animals from the bodies of female bears hours after death. Whether these reports are true or not we are unable to say, but from this case we are assured that the fœtus can live within the mother's corpse 14 minutes.

HEADACHES.

BY CHARLES C. HARROLD, M. D., MACON.

If any of you have lately had to look up anything on the subject you will probably realize how surprised I was to find that so little is written about it in the newer books. There is no trouble in the world in finding literature on the "headache of brain tumors," or "the headache of meningitis," or even "migraine," but the literature on headache as a whole is very scanty.

The classification I will adopt below is largely made up by combining the classification of Edinger with the one used by M. Allen Starr in his lectures. Starr's classification is, I understand, copied from Kraft-Ebing, whose book I unfortunately do not possess.

A. Organic.

B. Inorganic.

Under the organic we have:

a. Tumors.

b. Abscesses.

c. Meningitis.

Under the inorganic forms we have the vast majority of headaches and those which I will discuss later.

B. Inorganic.

1. Migraine, constituting about two-thirds of all headaches.

2. Indurative, according to Edinger making up another 2/5 hhs.

3. All other forms, viz.:

Syphilitic (may class under meningeal).

Circulatory (either congestive or anæmic).

Toxic: Drugs, tobacco, Bright's, which may be classed as circulatory.

Reflex, eye, ear, teeth, internal organs.
Headache of children.
Neurasthenia.
Headache of adolescents.

I fully realize that we have not time to take up and discuss all these forms and am going to limit my paper to a few of the most common. The first type I will take up is the

INDURATIVE HEADACHE.

So far it has been my good luck to strike only four of this type of headache and consequently was very much surprised to find that it is given such a high percentage in the etiology of headaches.

This type is really a rheumatic affection of the muscles of the head and neck, and seems especially to involve them at their insertions into the cranium. The sterno-mastoid seems to be invariably involved and the person holds his or her head as if in a vise. In getting in and out of bed he holds his head in his hands as if he were afraid he was going to lose it. The pain is very intense, and is increased on the slightest movements.

Patients as a rule are profoundly anæmic, the last one I saw having hæmoglobin 60 per cent. On palpation we find numerous extremely sensitive spots around the base of the skull, and some authorities state over the scalp.

The treatment of this type is very simple and satisfactory. It consists in a good purge, salicylates pushed to physiological action, and last but not least thorough steaming and massage of the neck and base. The anæmia is treated in usual way.

MIGRAINE.

This is the type we see the most and apparently know the least about. Article after article has been written about it and we really seem just about as far from the real causes of

it as old Hippocrates; for that matter we are just about as far from successful treatment now as he was.

The common name for migraine is "sick headache."

Its etiology is practically unknown. The inciting cause for an individual attack is often known by the patient, but the underlying cause is not known. We know that heredity often plays a part, in fact in practically all of the cases there is a history of other cases in the immediate family. I have one case which gives a history, a clear one, of the disease in three generations. Many cases give history of other nervous diseases in their families, such as epilepsy, insanity, etc. Epilepsy is the most common disease occurring along with it in families. This with its great similarity to epilepsy in some respects makes us think that their underlying causes must be the same or closely related.

More women have migraine than men, and the disease rarely commences after the age of thirty.

Exciting cause: These are very numerous and varied.

In some cases the slightest over-exertion will bring on an attack. In others, the slightest constipation, heat, anger, excitement of any kind, alcohol or tobacco. I know one case, a young woman who can not go to the theater in the evenings on account of the lights overhead bringing on a mild attack.

An article in *Modern Clinical Medicine* mentions a cause which I have seen several times and never saw in print before, though. I think it a very common one, that is, exercise on an empty stomach. This undoubtedly very often brings on an attack which could be avoided. I have one patient, who is very fond of dove shooting; he had almost had to give it up, having found that severe headaches almost invariably followed each hunt. He thought it was from his gun and used to stuff his ears with cotton until he could not hear it thunder. Headaches persisted and kept up steadily until I suggested to him that he fill his stomach with a couple of glasses of milk before starting out. Since then he has had practically no trouble at all.

A very common exciting cause is the menses. I have several such cases on hand, and they probably give me more

trouble than everything else I have. They all know just when they are going to have the pain, it generally coming on just before the period commences. In some cases I have been called in ahead of time and told that the headache "is due to-morrow, can you prevent it?" It is more than awkward to fail under such circumstances. Lately I have had better luck with this line of cases, as will be indicated below.

As stated above, the real underlying cause of migraine is still unknown. The fact of the urine being loaded down with phosphates and indecan during an attack has led men to think that the real seat of the trouble is in intestinal fermentation. For this reason intestinal antiseptics were and still are tried a great deal on this type of case. I think I gave them a pretty good trial and am frank to say that I do not think that I got the least good from them, and consequently became quite skeptical about the intoxication theory. Lately, however, I have come back to it again, and may be converted to it yet.

SYMPTOMS OF ATTACK.

1. Premonitory symptoms.
2. Sensory disturbances.
3. Headache.
4. Nausea.
5. Sleep.
6. Recovery.

Premonitory Symptoms.—These vary with different cases, but are fairly constant in a given individual. They come on from four to twelve and occasionally even 24 hours before the attack. In some cases the patients can foretell their headaches by a feeling of extreme well being, a feeling of exhilaration. This is soon followed by either depression of spirits, a dull, apathetic feeling or pronounced irritability and restlessness. At this stage or soon thereafter disturbances of circulation are often noticed in the face. I know one case in which the forehead during these premonitory symptoms is very much congested, is almost purple. This is

in marked contrast to the extreme pallor during the height of the attack.

Sensory Disturbances.

Commence soon after the above symptoms. These are generally disturbances of vision, such as "spots before the eyes, and queer floating colors." Photophobia is very common, as well as sensitiveness to the slightest sound. Patients at this stage generally shut themselves up in a dark room, shunning both light and noises. The eye symptoms when they exist almost always commence on the opposite side from the final headache.

Headache.

This is really coming on during the sensory disturbances, and is increasing in severity. Pain is almost invariably on one side of the head, though it very often shifts over to the other side or both sides at the same time before the attack is over. Pain of course varies in tensity in different cases, and even with same individual. The order of symptoms and the order of appearance of pain is very constant in a given individual. Most of the cases I have seen seem to commence in the supraorbital distribution of the fifth. This fact prompted me to try the experiment of killing this branch with results noted below under treatment.

The pain in this type of headache if left untreated lasts from two to forty-eight hours. I have never heard of a case lasting longer than two days. The majority of them last about twelve hours. Generally when the pain is at its height, the next two symptoms set in to aggravate it. I mean the

Nausea and Vomiting.—These symptoms are distressing and the retching seems greatly to aggravate the pain. During this time I know of no disease which more completely floors the patient. Very often relief from all symptoms comes almost immediately after the vomiting ceases. This fact has prompted me to try apomorphine recently in two cases, with results shown below.

Sleep and Recovery.—These, as indicated above, come often suddenly after the most distressing symptoms, and the relief is generally as complete as it is sudden. The sleep is generally very sound, the sleep of exhaustion, and on awakening the patient is completely recovered.

COURSE OF MIGRAINE.

The disease persists in the female until after the menopause, and in the male generally until after fifty.

THEORY OF HEADACHE.

The theory of headache will be discussed here after the symptoms, while the symptoms of migraine, the typical headache, are fresh on the mind. The deductions are taken practically verbatim from Edinger's article on headache in *Modern Clinical Medicine.*

All headaches become manifest in the region of the trigeminal or fifth nerve. These nerves run to their ganglia (Casserian) and thence as roots to their central origin.

Numerous observations have proven that irritation of a sensory nerve, of its root or of its ganglion produce pain. On surveying the path of the fifth nerve we must conclude that if headaches are caused by disturbances of this nerve in one of its three parts, these irritative disturbances must be in its peripheral distribution and conveyed thence to the supposed cortical area of the same. Irritation between the root and the cortex would almost surely disturb other paths and produce pains in other parts of the body. As we know, in headache such other pains do not exist.

If headaches were caused by irritation of the gasserion ganglion then often in headaches the two lower divisions would surely occasionally be involved, and we know as a matter of fact that they are not.

As yet it has not been positively proven that the irritation between the ganglion and the cortex does not occur. That is, along its intra-cerebral portion. Such lesions would be rare if not impossible without involving other tracts.

This leaves us to conclude that the peripheral portion of the nerve must be the one in which lies the pathologic cause; that is, either in the cutaneous or the dural branches.

The cutaneous branches are undoubtedly occasionally attacked by rheumatic processes, as the cervical nerves are in the indurative headache above described. In the majority of headaches, in the vast majority, this does not occur. It does not occur in migraine, where the trouble is undoubtedly deeper in. My two cases of migraine in which the attacks were always ushered in by pain in the right supra-orbital and in which I killed the nerve in the supra-orbital exit with osmicacid were cases in point. Though the nerve was absolutely killed the migraine persisted just the same at each menstrual period.

This all leads us and leaves with the conclusion that in the majority of headaches the disturbing fact must be on the other peripheral branches of the fifth nerve, namely, the dural nerves.

Just what this disturbance is we still do not positively know. Most probably it is a disturbance in the circulation in the nerves causing a disturbance in its circulation of blood and lymph. Such a disturbance does produce pain in other nerves we know, as in sciatica. Pressure does not alone necessarily produce it, as cases of tumor of the brain with intracranial pressure do not all have headache and even pressure on the dural nerves themselves does not always produce pain.

Summing up, to again quote from Edinger:

We know that the agent which produces headache attacks the dural nerve, perhaps also the nerves of the pia-mater. The sensation of pain is of course conveyed through the brain. We know that headaches may be due to various causes. We do not understand the mode by which they damage the nerves nor in what manner they produce pain. Anæmia and hyperæmia are factors which may be included and probably most forms of headache may be attributed to these two conditions.

TREATMENT OF MIGRAINES.

I am afraid the theories as to the causes of headache in general and of migraine in particular have not helped us much in rational treatment. The treatment naturally divides itself into treatment between attacks and during attacks.

TREATMENT BETWEEN ATTACKS.

We know that many children are predisposed to attacks of migraine and their lives should be regulated as much as possible to prevent the attacks. I think that such children should be kept out of school as much as possible, made to stay outdoors, do very little reading, have their eyes often examined, their bowels kept open, should all be examined for adenoids or large tonsils and have same removed even if only slightly enlarged.

In adults similar general hygienic lines should be followed as much as possible, especially attention being paid to keeping the bowels open. This should be especially seen after just before a headache. For this purpose I have stopped using calomel and salts, as I got very poor results from them. I think that they really seemed to do more harm than good in some cases. Now I use two purges, the oldest, castor oil, and one of the newest, viz.: regulin. A combination of the two works very nicely, and I have seen them undoubtedly abort attacks of migraine in some cases and cut them down in both duration and severity in others. It is my custom now to use small doses of regulin daily in my headachy patients. Then the day before a headache is due or just as soon as one is felt coming on (this is from four to twelve hours beforehand generally), I have them take moderate doses of oil, say an ounce and one-half. Before I used regulin I was in the habit of using small doses of oil between attacks, and a large dose of oil immediately preceding attack. I have found, though, that the regulin works just as well and is nothing like as objectionable. Lately I have tried three cases of migraine occurring just before menstrual period on fermented

milk for one week before attack and then customary oil. In all three cases headache was missed entirely. I first used Kumiss, but have had these cases using buttermilk lately with just as good results. About a year ago I tried curettage in one of these cases of menstrual type and found relief for one month. Both the patient and I were disgusted at the return of the attacks after that.

I also tried using glycerine tampons against the cervix in two cases of this type with absolutely no benefit.

I can not emphasize too strongly my approval of the regulin in headache cases between attacks. I have several cases on hand in which I am absolutely sure that it alone has absolutely kept off attacks, and two more in which it and buttermilk together have.

Treatment During Attack.

We have really made very little advance here in the past ten years. Some patients undoubtedly do well if put on heavy doses of bromide at the very beginning of the attack, kept perfectly quiet on their backs. I use large doses of bromides when I use them at all, giving 60 grains, and repeating in two hours if patient is not asleep. I do not think that we get any result at all from the bromides if we do not see the case in the very beginning of the attack before the pain is really well ushered in. Some men advise starting bromide well ahead of time or even keeping the patients under it as in epilepsy; having had no experience in its administration in this manner am not in a position to judge its merits. It has been my experience, though, that migraine differs from epilepsy in one great respect. We do not mind keeping the epileptic dopey; on the other hand, the migraine patients as a rule would probably object to it rather strongly. They are too well between attacks to think of or agree to the use of any stupefying drugs.

Some patients undoubtedly do well on caffeine, either alone or combined with salicylates. I have often used a favorite prescription of Starr's, which is known at Vanderbilt Clinic,

New York, as Starr's one two three, i. e., one grain acetanelid, two grains phenacetin, three grains of caffeine citrate, repeated about every two hours until effect. It undoubtedly works well sometimes. I say sometimes, for we all know of cases which it does not touch at all; I have had them tell me that they could eat the combination like salt and it would have no more effect on them.

Morphine of course will relieve them, as will occasionally codeine. We have the bad after effect and danger of inducing the habit to bear in mind.

Hyoscine has been my favorite drug now for quite a while, and so far I have had no reason to regret my use of it. I know that many good therapeutists say it is dangerous, so I always examine the circulation carefully before giving it. I have yet to find a case where it does not cut short the attack a number of hours. The patient almost invariably goes into sleep, waking up in a few hours feeling a great deal better. One thing they must be warned about is trying to get up while under the effect of it. They are so drunk that they are apt to drop. This is, I confess, the great objection to it, as I always give a large dose of oil immediately on seeing case, and they are apt to want to be moving around some while under the effect of hyocine if it is given later.

My routine now is to give the oil and caffeine when I first see the patient, hoping that I will not have to give the hyocine. Then if no relief, I never give the hyocine until the bowels have acted thoroughly, and then if I have to give it I warn patient not to get up and walk but use either bed-pan or commode if bowels move any more.

In two cases lately I have used apomorphine during the height of the attack. They were patients who never vomited in their attacks, and I tried it as an experiment. In both cases it seem to hurry up things, but it is needless to say that it is a rather drastic treatment and a doctor has to know his patient very well to use it.

Syphilitic Headache.

Just a few words about this type of headache, especially its treatment. I learned from Starr that in all cases of cerebral syphilis the two things to be done are to get in large doses of the iodide and quick doses of mercury. Large doses of the iodide, say 100 grains, does not upset the stomach a bit more or even not as much as smaller doses. It is my rule in these cases to inject bichloride into the buttocks every day until the effect is noticed, then start giving inunctions. I use 1/10 grain of bichloride every day. I do not believe in the use of calomel hypodermically at all. It is sometimes absorbed and sometimes not. You can never tell. I have a man on my hands now with nodules the size of pigeon eggs in his buttocks from calomel injections given ten years ago. I know there is a bunch of mercury in them right now which have not yet been absorbed.

Circulatory Headaches.

Krafft-Ebing classes the headaches of Bright's, anæmia and hyperæmia under this head.

Time forbids my taking up these or the reflex headaches in detail. Under reflex headache I wish to call especial attention to those caused by teeth. These headaches are unilateral, and may be mistaken for either neuralgia or migraine.

Reflex headaches from errors of refraction is too large a subject to be discussed at this time, and is more in the line of the specialist.

Discussion.

Dr. J. W. Duncan, Atlanta: In most cases of migraine, I find that the pulse is slow. One thing I have had good results with is canibis indicæ, 5 or 10 drops of the tincture. Sometimes I combine this with 5 or 10 grains of muriate of ammonia.

Dr. CHARLES C. HARROLD, Macon (closing discussion): I have never tried canibis indicæ in these cases. Regulin is agar agar. It simply absorbs from the intestines and makes a mass to be pushed on through. It is very much like gelatin. It is, of course, a proprietary article. I have tried the agar agar itself, but it is not as palatable as the regulin.

SQUINT AND THE IMPORTANCE OF ITS EARLY CORRECTION.

BY HUGH M. LOKEY, M. D., ATLANTA.

Strabismus* was mentioned in the earliest medical writings, but was regarded as a permanent deformity. Hippocrates in his writings twenty-two centuries ago refers to it as a distortion, and recognized its inheritance. Celsus in the first century of our era refers to it, but at this time it was not considered ameliorable to treatment. Paulus Aginetta in the seventeenth century recommends the wearing of a mask extending below the nose, with openings for each eye, to induce the eyes to assume their proper position. Pare, in 1561 to 1577, describes squint eye as an inequal vision caused by the cradle being placed so that the child sees the light from one side, thus causing the eyes to divert towards the light. Many still adhere to Pare's etiology, and many of the laity now, as well as some of the profession, attribute deviation to the fault of the cradle, a lock of hair hanging over the temple, etc.

In 1737, or before, John Taylor announced an operation by which he could straighten crossed eyes. His practice was to a degree charlatan in nature and did very little to introduce to the world any correct surgical method for the relief of squint. The first practical operation is described in 1838 by Stromeyer. This grew out of the theory that the contracting muscle was shorter and thicker, and the first authentic operation was done by Dieffenbach, of Berlin, in 1839, the operation being similar to the one of the present day for tenotomy. After this the pendulum swung rapidly and operations were indiscriminately made, with, of course, frequent bad results.

Von Graefe, in the fifties, demanded a more conservative policy. Then came Donders, with his theory of strabismus

* Stevens.

being due to errors of refraction, arising from disturbed relationship between the accommodation and convergence.

1. That strabismus convergens is dependent upon hyperopia.

2. That strabismus divergens is dependent upon myopia.

Donders' theory was readily accepted and is adhered to by many to-day, but theoretically and practically shown to be inaccurate. For a time previous to this all squinting eyes were operated upon. The reaction of the pendulum swung rapidly back and resulted in almost as harmful advice,—to wait until the child had outgrown the deformity.

There are two forms of strabismus, the paralytic and concomitant varieties. I will here deal with the concomitant variety. The method of determining the paralytic from the concomitant is as follows:

In the paralytic form the axes of the fixed and the deviating eye do not maintain the same relationship when the eye moves from side to side, while in the concomitant the same relationship of the axes is maintained in all positions. According to Donders' theory, strabismus and heterophoria are produced by the same causes and are confused by some.

Worth's view is that squint is due to deficiency in the development of the fusion faculty (this is frequently inherited), accounting for the frequent occurrence of children of squinting parents possessing the same defect. Breslau states that 23 per cent. give this history.

Fritz Kehr (in *Wachenschrift fur Therapie und Hygiene des Auges,* December 8, 1904) divides the authors of the several theories into three classes. 1st, those who believe amblyopia is the result of strabismus: A. von Graefe, Donders, Javal, Grunfeld; 2nd, those who believe that it is partly the cause and partly the result of strabismus: Alfred Graefe, Schweigger, Silex; 3rd, Kehr himself. The first two believe it can be improved, but Kehr believes it is the result of amblyopia, and that the amblyopic eye can not be improved.

La Grange and Moreau in *Archives d'Ophtalmologie* in 1907, reports his findings of 562 cases of concomitant squint. In 81 per cent. refractive error was the chief cause, and in

38 per cent. refractive error was the sole cause of the strabismus. 43 per cent. of the refractive errors were complicated; 19 per cent. had no error of refraction, and were referred to a strabismus diathesis. The inheritance is due to the pathological condition of the nerve centers and consequent degeneration of the fusion sense. In 1.50 per cent. it was of muscular origin.

A. Baker, Cleveland, in the Journal of the American Medical Association, July, 1907, says that squint comes on slowly; at first it is intermittent, then alternating; finally persistent, with deterioration of the sight in the deviating eye. He says 75 per cent. of squints develop before the fourth year. Refraction should be corrected at the end of the first year, atropizing both eyes at the earliest stage, and in connection with this training the fusion faculty. If not corrected by the tenth year he operates. He considers the retinascope the most reliable method of refracting young children.

Dr. de Schweinitz gives as the cause of strabismus:

First: Disturbance of relation between the accommodation and the convergence by an error of refraction.

Second: Disparity in the length, thickness and tension of opposing muscles.

Third: Inequality in the vision of the two eyes, or amblyopia of one eye, which removes the natural stimulus (of diplopia to exact convergence).

Fourth: Disturbance or innervation and defective development of the fusion faculty.

Fuchs says the natural development of squint is accomplished by the reduction in the visual acuity of one eye. Strabismus is the result of combined action of two factors: diminution of the visual power of one eye and pre-existing disturbance in the muscular equilibrium. In strabismus convergens ¾ are hyperopic. In strabismus divergens 2/3 are myopic.

Wendell Reber, in the *New York Medical Journal*, November, 1904, states that squint is likely to appear about the third year. Believes that amblyopia of the squint eye is due

to non-use; that it is curative without operation if taken before the fifth year. That the amblyopic eye can be improved by correcting glasses in 50 to 60 per cent. of the cases, and can be cured without an operation in 70 to 80 per cent. of such. Results can not be obtained after the seventh year.

Herman Cohn (in *Wachenschrift fur Therapie und Hygiene des Auges,* October 6, 1904) outlined his treatment of two thousand cases of squint, covering a period of forty years, in which 700 were operative.

First: Until the fourth year bandage the better eye for a few hours each day.

Second: In the fifth year he corrects with glasses and stereoscopic exercises.

Third: He constantly corrects the total hyperopia.

Fourth: He operates only for strabismus of the highest grade in the sixth year, otherwise, he waits until the tenth.

Fifth: He promises betterment of position but never binocular vision.

Sixth: In strabismus of high grade he advances the external rectus.

D. B. St. John Roosa, in the *Medical Record,* September, 1905, reports two cases: one, convergent strabismus followed by amblyopia exonopsia, cured by the use of glasses and the exclusion of the good eye at intervals and the use of stereoscopic exercises.

Second: Case of amblyopia, which had increased when seen the second time, was afterwards relieved by the exercise of the eye.

In stationary convergent strabismus, Foster, in the *Colorado Medical Journal,* July, 1907, orders glasses the second year, or as early as squint is observed, using atropine in the fixing eye and exercises with the Worth's amblyoscope. If this does not relieve the condition he operates.

Frochlich (in *Wiener Medizinische Presse,* May 11, 1907) gives for treatment of strabismus, atropine in the fixing eye.

A. A. Bradburne, Southport, England, for over three years with Dr. Worth, who is conceded authority on squint, in *Ophthalmology,* July, 1908, says there are two chief varieties

of squint, viz.: paralytic and concomitant. In concomitant the eye can be moved freely in every direction; in paralytic the movement is limited by the paralyzed muscle. He gives as the causes for squint:

First: A difference in the refraction of the two eyes.

Second: Deficiency in the fusion faculty, and in addition there is nearly always found

Third: Defective vision of one eye, amounting to the loss of useful vision.

Fourth: Inability to bring the deviating eye to bear directly on an object. Many cases of squint disappear, but never the concomitant, the fusion faculty being defective. The squint that is outgrown is simply due to muscular imbalance, that is, heterophoria in which there is the presence of fusion faculty. The fusion faculty can seldom be awakened, after the sixth year. The recovery of the vision of the deviating eye is seldom accomplished after the sixth year. A delay means the loss of valuable time, most squint beginning by or before the age of three.

There are three indications which require attention.

First, to prevent the vision of the deviating eye from deteriorating.

Second, to remove the cause by training the defective fusion faculty.

Third, remove the disfigurement. The means of correction are the removal of the refractive error, the complete occlusion of the fixing eye; training patient to use the deviating eye. This can be done by using atropine in the fixing eye and training the fusion faculty by developing the brain centers; training the muscles of the eyes when defects exist, and operating when the above fails.

Two essential conditions are present in every case of concomitant squint.*

First: Abnormal convergence of the visual axis.

Second: Defective fusion faculty. Other conditions may also be found. The vision of the eye which is not being used for fixation is almost invariably suppressed.

* Worth.

Third: There is in rather rare instances, more or less congenital amblyopia.

Fourth: There is very often acquired amblyopia in the deviating eye as the result of neglect or improper treatment.

Fifth: There is usually a refractive error, commonly hyperopia or hyperopic astigmatism.

In the normal eye with normal fusion faculty there is a desire for binocular vision. Binocular vision is formed by rays of light falling upon corresponding sensual centers of the retinæ. When the two eyes have not the same visual axis binocular vision is impossible and there is confusion of objects, with a tendency to diplopia. The most indistinct object is suppressed by the brain centers and this produces an amblyopia exanopsis. Where the hyperopia is greater in one eye than the other, the retinal impression is less distinct in the eye with a higher degree and there is required an extra tension in the effort to accommodate, which increases the convergence with a confusion of images. The indistinct impression upon the retina allows this abnormal dynamic force to exert itself and renders the eye freer to swing in, hence we have squint as a result. Squint in these cases is at first occasional, but if the refraction is not corrected, the excessive exercise of the dynamic function causes an abnormal static convergence and squint is caused.

The proper method of examination is:

First: Get history of the case, whether or not there are any other members of the family, parents, brothers or sisters, who have squinting eyes; nature of the squint; the state of central fixation; the movement of each eye separately; visual acuity and the refraction of each eye.

To determine the squint-eye, place a card over one eye, having the patient look at a distant object. If there is no movement of the uncovered eye, it is the fixing eye. Quickly move the card to the other eye; if there is a movement, it will be the squinting eye. A more satisfactory test and the one best applied with children, is with the light reflected upon the cornea. Place the child before you with the light at its back and with the retinascope or ophthalmoscope reflect the

light upon one cornea. This attracts the child's attention. If the reflection is in the center of the pupil, this is the fixing eye. Shift the light to the other eye and if the reflex is not central, the eye is squinting, and by the position upon the cornea that you have the reflex, you can determine the degree of deviation.

Reviewing the various theories, we must come to the conclusion that while, according to Donders' theory, errors of refraction are responsible for a certain per cent. of squint, we can but accept Worth's theory, based upon clinical experience, that the lack of fusion power is the principal cause for concomitant squint. While most divergent squints are myopic and convergent are hyperopic, and also where squint is permanent, the squinting eye has a greater error of refraction than the fixing eye; yet we find a certain degree of amblyopia in this eye with an inability to fuse objects with the fellow eye.

We can but give some credence to Donders' theory, as it is essential to correct all refractive errors, or we would not get results from our fusion training. To substantiate this theory, in most cases where strabismus is present in eyes with a total loss of sight or where corneal opacities exist, there is a tendency to divergent squint.

This brings us to the line of treatment which should be followed up for correction.

I. The correction of all refractive errors and in connection with this, the training of the fusion sense.

II. There are some cases in which we have binocular vision where eyes are brought to the same focal axis and in these cases the correction of refractive error, allows the muscles of co-ordination, through relief from extra stimulus of the accommodative centers, to keep the focal axis adjusted.

But there are those cases which have not the power of binocular vision and which will require the fusion training of the defective eye.

A number of methods are used for this—example:

1. Worth's amblyoscope.
2. Sterescopic charts, etc.

3. Also by atropizing the fixing eye and forcing the use of the squinting eye, the vision is developed and binocular vision can be cultivated after the fusion sense has been developed.

Unless these amblyopic eyes are trained, we will have a complete, or almost complete, amblyopia exanopsia.

This ability for developing fusion sense, according to the experience of authors referred to, exists rarely after the sixth year. A child is not too young to begin training when squinting is noticed, as it usually manifests itself about the second or third year. The earlier the training is begun, the more satisfactory results will be gained with less degree of amblyopia.

Where a correction of errors of refraction and training of the fusion sense does not correct squint after some months' training, either a tenotomy or advancement should be done to correct remaining defect.

As my paper is more to impress the importance of early correction of squint on account of the disastrous results produced by delay, I will leave discussion of operative measures for further study.

NEURASTHENIA.

BY W. HERBERT ADAMS, M. D., SAVANNAH.

Neurasthenia, as its name implies, is an asthenic condition of the nervous systems, both cerebro-spinal and sympathetic.

Etiology.—The most important predisposing factor in this disease, as in so many of the other neuroses, is heredity. I will not say that neurasthenia never develops in a person who has inherited a perfectly sound nervous system, but the instances are very rare indeed, and only supervene upon the most severe and persistent exciting causes.

Racial Factors.—This disease is found most frequently among the more highly civilized and intellectual races. The Jewish race, for obvious reasons, being especially predisposed to this condition. The negro race, on the other hand, is strikingly free from it. The Latin races are held by some authors to be especially prone to it. That they are especially liable to nervous troubles of a hysterical nature I am prepared to admit, but that they are more prone to neurasthenia than the more serious Anglo-Saxon or Teutonic races is to me unbelievable. Neurasthenia is generally the result of overwork plus worry, neither of which is a predominant characteristic of the light-hearted Latins.

The disease is about equally divided between the two sexes. Marriage, especially the unhappy ones, seems to predispose to it. The most frequent age for it to develop is the one in which the struggle for success in life is the most strenuous, namely, from twenty-five to fifty years.

Occupation.—Indoor occupations strongly predispose to it and some authors give as high as 80 per cent. as belonging to this class. Those whose livelihoods are gained mainly by constant exercise of their mental faculties seem especially liable to it, and it is seen almost exclusively among city dwellers, rural inhabitants being singularly free from it. An

exception to this is found, however, in a certain class of country women who from incessant work, family cares, anxieties, constant dread, fears and frequently marital abuse and unappreciativeness, finally develop into most pronounced cases of neurasthenia. And permit me to say en passant, that they will prove to be among the most difficult of any cases which you will be called upon to treat. The chief exciting causes are overwork, either mental or physical, plus constant worry, anxiety, dread and fear. The infectious diseases, especially influenza, are frequently responsible for it.

Sexual excesses, an almost universal habit at the present day, with their enormous drain on the nervous system, are especially liable to produce a profound state of neurasthenia. In fact, any disease, or condition of an exhausting nature or which produces symptoms which are obtrusively and constantly patent and annoying to the individual, will sooner or later eventuate in a neurasthenic condition.

The various malpositions of the abdominal and pelvic viscera, such as gastroptosis, enteroptosis, movable kidney, uterine and ovarian displacements dependent upon lack of tone of their inherent or supporting structures, constipation, etc., are, in my opinion, much more frequently effects than causes of this malady.

Alcohol, either in moderation or excess, probably causes neurasthenia more frequently in other members of the user's family than in the users themselves. Alcohol is an unmitigated evil, but neurasthenia rarely develops in the users themselves, though their posterity are frequently not so fortunate.

Sudden shock or traumatism may, at times, precipitate a condition of hysteria or hyponchondria of neurasthenic type with which, when a suit for damages is pending, an element of malingering is frequently commingled. The three great etiological factors we find to be heredity, overwork, mental or physical, and worry. And in this age of strenuous and luxurious living requiring one to work under high pressure all the time to keep up with the ever-increasing pace, it is no wonder that many fall by the wayside, some to recuperate

and take up the mad pace again, others to limp along wearily to the end of life's journey.

Pathology.—Neurasthenia is one of the so-called functional neuroses. This simply means that at present we have no means delicate and accurate enough to determine the minute structural or nutritional changes which take place in the neurones, which damage them to the extent of preventing their functionating properly and maintaining the necessary equilibrium of intake, storage and output of neural energy.

Diagnosis.—The symptoms of a fully developed and typical case of neurasthenia are absolutely pathognomonic. A typical or complicated cases, however, or those in the formative stage are frequently treated without a recognition of their true nature. The diseases from which it has most frequently to be differentiated are hysteria, hypochondria, melancholia, early stages of paresis and dementia præcox.

From hysteria it may be differentiated by the absence of sudden hysterical outbursts, history of development of the case, hysteria being of sudden and neurasthenia generally of insidious onset. The hysteric rarely complains of feelings of constant weariness and exhaustion. Moreover, they occupy by preference a place in the foreground of every picture. The neurasthenic is generally self-deprecating and realizes his limitations, and is of a more retiring disposition.

The hypochondriac is constantly and entirely taken up with his particular malady, and has, in fact, positive and fixed delusions on the subject. He is entirely self-centered, caring for nothing outside of himself and his particular set of ailments. Furthermore the physiognomy of genuine hypochondria is absolutely unmistakable and pathognomonic.

In melancholia we have constant and profound depression generally dependent on some delusion of unworthiness. The depression of the neurasthenic is not so constant or profound. The melancholic does not present the symptoms of exhaustion so constantly present in the neurasthenic. Indeed, in some types of melancholia, especially the agitated forms, there is an amount of energy expended which would be quite impossible for the neurasthenic.

Paresis in the earlier stages may for a time present some difficulties in differential diagnosis, but not for long, because the feeling of exhilaration and well being and the general expansive delusions so characteristic of paresis present a picture too plain to be mistaken for anything else, to say nothing of the pupillary and other reflexes, tremors, etc.

Dementia præcox is differentiated by the age, occurring generally soon after puberty, by the greater amount of dementia and listlessness, and general mental deterioration.

The malingerer rarely complains of such a wide range of symptoms as the neurasthenic, generally confining himself to some particular group.

Prognosis.—Neurasthenia is essentially a chronic disease. It may be and frequently is recovered from, but the tendency to recur is marked and increases with each attack. Given, however, a patient who can be made to realize the true nature of his malady and who is in a financial condition to enable him to carry out the program mapped out for him by a competent physician, the outlook should be hopeful. Much, however, will depend upon the patient's heredity, temperament, suggestibility, and the ability to rid himself permanently of the predisposing and exciting causes. Another most important factor in the prognosis is the stage of the disease at which the patient has arrived. This disease, like most others, being far more amenable to treatment in its incipiency than when it has become chronic, and especially when the patient has made many unsuccessful attempts to rid himself of this malady, for be it known that every unsuccessful effort but more firmly fixes his gradually growing belief that his particular case is not amenable to treatment. This is one reason why any physician not feeling himself possessed of the requisite temperament and time to study and treat the case with that consummate patience and self-sacrificing devotion to the best interest of these most trying patients, which the exigencies of their case so urgently demand should refuse to assume charge of the case. By so doing he will be doing the patient a favor and save himself a very

vexatious course of treatment and humiliating, ignominious and widely heralded failure.

Symptoms.—When one stops to consider that nervous energy is expended in every action or movement, both voluntary and involuntary, of every organ, muscle and tissue of the human body; that we can not think a thought, call up a memory, feel an emotion, originate, store up, co-ordinate or send out a nervous impulse without an expenditure of neural energy; that every act of secretion, excretion, metabolism, or vaso-motor change, in fact every spychic or somatic function, however great or small, depends for its proper carrying out, on a properly functionating nervous mechanism, we realize how multitudinous and varied may be the symptoms arising from a loss of or interference with the proper balance and maintenance of nervous energy. The psychic and somatic symptoms generally originate and progress together, sometimes one and sometimes the other seeming to predominate.

The *psychic asthenia* may manifest itself in one or more of the following symptoms: Lack of power of concentrated and sustained mental effort, lack of self-confidence, lack of ambition or desire to take up new lines of work, vacillation of purpose, fickleness, self-deprecation, unwarranted anxiety and irritability, hyper-emotional, unduly elated, depressed or excited without adequate cause, hypersensitiveness, feeling of intense weariness and exhaustion from any unusual or prolonged mental effort, insomnia, disagreeable dreams, unrefreshing sleep, patient feeling as tired and worn out when awaking from such a sleep as when he went to bed; in graver forms, serious loss of memory, fear of becoming insane, suicidal tendencies which, by the way, very frequently eventuate in the patient's death, lack of power of recalling names, facts or faces when desired, inability to inherit certain thoughts, tunes or sentences from running continuously or at frequent intervals through the mind.

Many of these patients retain for a long time their ability to perform a certain amount of work, either mental or physical, provided it is of the nature and kind to which they are

habituated by long experience, and can be performed in an almost automatic manner, but let anw new duties arise calling for any unusual expenditure of mental or physical energy, and the patient is either entirely unable to perform it at all or does it in an improper manner, and experiences extreme prostration afterwards. A very interesting group of symptoms are the various phobias by which certain of these patients are harassed. The most common are the fears of open spaces, fears of riding on cars, fears of being in crowds, etc. Many of them have mild forms of what the French call "Folie du doute."

The physical symptoms of neurasthenia are not so well recognized and are often treated without a true conception of their "fons et origo." Furthermore, most of them are entirely subjective in character and entirely incapable of being demonstrated or explained on any rational anatomical or physiological basis.

Nervous dyspepsia, gastroptosis, enteroptosis, mucuous colitis, enteritis, polyuria, transient glycosuria, various vasomotor phenomena, profuse perspiration, flushes, cold extremities are frequently seen, cephalalgia, rachialgia, myalgia, pseudo-angina, paresthesia, hyperasthesia, exaggerated reflexes, dermography, astenopia, injeccted conjunctivæ, spots before eyes, pain and feeling of pressure over eyes, contracted visual field, inability to use eyes very long without feeling extreme weariness therefrom, extreme prostration following coitus, inability to bear pain, and finally culminating in a condition in which all mental and physical effort beyond mere vegetative functions become impossible, to be in turn followed by slow improvement or hopeless invalidism.

The foregoing long list of symptoms might be added to indefinitely, but they will serve to show the general characteristics of this disease. Of course, no one patient will show all these symptoms, but the number which some patients will complain of is astonishing, and by their very multiplicity will often establish the diagnosis.

Treatment, Prophylactic.—Children of neurotic parentage

and nervous temperament should be most carefully reared and every means used to insure a strong physical organism. Such children should live much out of doors, should not have their mental faculties unduly pushed, should not be encouraged to lead their classes or go in for prizes at school, should not be pampered or humored unnecessarily, should be taught self-control, self-restraint, to be cheerful, unselfish, optimistic, never to worry over anything, and to be manly and self-reliant.

Neurasthenia, as before stated, is generally a disease of insidious origin and gradual development. The well-known typical picture seen in a fully developed case of neurasthenia is sometimes months or years in its development, and it is in its developmental period that it is most amenable to treatment, and it is a stigma on our profession that we do not more frequently recognize this disease in its incipiency and treat it on basic principles, rather than in the haphazard symptomatic manner in which it is too often handled. Many of these patients are frequently treated symptomatically for months for many of their individual symptoms, of dyspepsia, the various visceral displacements to which allusion has been made, malaria, etc., etc., by stomach washings, various fixation operations, intestinal antiseptics, etc. That all these measures are sometimes indicated is true, but we all know how often they absolutely fail, not only to relieve the basic trouble, but even the particular symptom towards which they were directed, and the poor, discouraged patient passes from one doctor to another, each one confident that as soon as he takes this or that course of treatment, or undergoes this or that operation, he will be all right, until finally the now thoroughly disgusted patient finally decides to consult some "expert specialist" of the advertising brand, or Christian Science, or osteopathy, or some other fad of the hour. That they are finally driven to such resorts to obtain relief is nothing less than a disgrace to the ethical members of our profession.

The most important feature in the treatment of this disease is to secure the patient's confidence in your ability to

cure him of his malady. This happy result will depend largely upon your own personality, and the number of unsuccessful attempts that the patient has already made to secure relief. It takes a man who is self-reliant and who thoroughly understands the disease in all its details. He must be a man of forceful personality, fertile in resources and tactful to a degree, and he must have the patience of Job. The vacillating, hesitating, easily discouraged, impatient physician has no place here, his utter failure being foredoomed from the beginning.

The physician having thoroughly studied the particular case from all sides, mental, moral, physical and financial, makes up his mind to follow a particular line of treatment, owes it to his patient and himself to carry out that course conscientiously until convinced that it is the wrong one.

Mental suggestion is the most powerful single weapon we have in this disease, and it can be made either through the medium of speech or through various physical agencies. The patient must be made to cultivate a spirit of cheerful optimism under all conditions and circumstances, and to worry and be anxious over nothing, always remembering that "For every evil under the sun, there is a remedy or there is none. If there is one, try to find it, and if there is none never mind it." It is right along this line that Christian Science comes in strong. That they sometimes get results in these cases after we have failed is not to our credit, to say the least.

The Rest Cure is absolute for some cases, mostly women with hysterical symptoms intermingled with their neurasthenic condition, modified for others, men who have led active lives and who do not take to it so readily, sometimes chafing under the restraint, injure themselves more than the good they receive from it.

Hydrotherapy is an excellent remedy and is applicable in nearly every case. The method of its application varies to suit individual cases. This measure can be carried out in almost any home and the elaborate hydriatic paraphernalia is not absolutely essential except for its psychic effect, which, by the way, must not be minimized.

Electricity is useful both for its somatic and psychic effects. The static forms and high frequency currents are in my opinion the most applicable.

Massage is useful in connection with absolute rest cure, but can be easily overdone and produce far more harm than good.

Travel, if leisurely, pleasantly and judiciously done, is very helpful. Otherwise it is fatiguing and injurious. Diet should be as nutritious as the patient can digest without overtaxing his digestive apparatus. At times digestion is much impaired, stomach dilated displaced and muscular motions and secretions diminished. In such cases food must be concentrated and easily digested. Some may need artificial digestants and anti-ferments for a time.

Drugs.—These patients as a rule require few drugs. They are mainly used symptomatically. There is this rule, however, to follow in giving neurasthenics drugs. Give them in large enough doses at first to produce a pronounced effect, give them in larger volume of menstrum, and do not try to make the taste too palatable and elegant. The neurasthenic wants his money's worth when it comes to taking his medicine and we should see that he gets it if we want to get results. Narcotics from their ability to lessen the painful physical and psychic symptoms of these patients are especially dangerous to give for any length of time, and the nature and formulæ of such remedies, of course, must be carefully guarded from the patient's knowledge. Strychnine is very frequently given to these patients for its tonic effect, but as a matter of fact drugs of the bromide class will be found very much more beneficial to most of these patients. They do not need excitants but sedatives. Drugs like caffeine and opium, which lessen the sense of fatigue, mental or physical, will nearly always give relief, but must be most judiciously used to prevent their continued use and abuse.

The ways and methods of accomplishing results with these patients must be varied to suit individual cases and the physician who expects to hold and cure these patients must be bold and fertile in resources, and if he finds no text-book

authorizing or furnishing a precedent for any plan of action that his judgment, based on a thorough study of the case, tells him is fit and proper for that particular instance, that need not deter him from following his best judgment in the case. These cases at best are unsatisfactory and trying on our patience and temper to the last degree. In fact, a physician who sees several of these patients daily, if he gives them the best that is in him, will feel thoroughly worn out himself at the end of the day, and if kept up indefinitely, all but the very strongest will themselves eventually need attention.

And now, Mr. President and gentlemen, thanking you for the courtesy you have done me in listening to this paper, and trusting that it may bring out a full discussion, and that it may cause some of us to be more careful in our diagnoses and more thorough and painstaking in our treatment, that we may keep these patients and cure them ourselves and not let them drift to the irregulars of various types, I will tax your patience no longer.

ANTI-RABIC SERUM, WITH REPORT OF CASES.

BY JAS. N. BRAWNER, M. D., ATLANTA.

It has long been believed that the immunity established by the administration of the Pasteur treatment for the prevention of hydrophobia is anti-microbic in nature. This is to be expected *a priori* from the nature of the treatment, since it is the injection of the attenuated germs of rabies and not their toxins or soluble poisons that produce the immunity. It is quite possible that there is a limited amount of free toxin associated with the germs in the nervous tissue of rabid rabbits, which when injected into the tissues of the body produce a certain amount of antitoxin, but of this we have no proof. On the other hand, the evidence showing the anti-microbic nature of the antibodies that result from the immunizing process is now extensive and quite conclusive.

As far back as 1889, Babes and Lepp showed that the serum of animals having received the Pasteur treatment possessed rabicidal properties, i. e., the serum, when mixed with rabic nervous tissue, would destroy its virulence. Later, Kraus devised a technic well adapted to show the anti-microbic properties of anti-rabic serum. He emulsified rabic nervous tissue in normal salt solution in proporton to 1 to 100 and then filtered through paper to remove coarse particles. Varying amounts of the immune serum were then added and after several hours' contact the mixtures were inoculated into rabbits. By this method the proportionate amounts of anti-rabic substance could be determined in different serums.

Tizzoni and Centanni have also prepared an immune serum and have shown that it will destroy the virus in vitro in proportion of 1 to 800.

The experiments of Remlinger also confirm the anti-microbic nature of the immune bodies.

During the past few years Marie and his co-workers have made numerous experiments along this line and have shown that the serum from an animal immunized against rabies will destroy the virus either in vitro or in vivo. He has also shown that the amount of antibodies vary greatly in serums obtained from animals that are subjected to different methods of immunization. Other investigators, also, have demonstrated the anti-microbic powers of anti-rabic serum. The evidence that such is the case seems overwhelming.

No doubt the conferring of an active anti-rabic immunity goes hand in hand with the production of specific antibodies in the blood, giving us some index as to the strength of the immunity conferred by different methods of vaccinations. Experiments to determine this have been numerous and various methods of attenuating the virus have been tried. According to the Pasteur method the virus is attenuated by drying over caustic potash, while Tizzoni and Schwarz use gastric juice. For the production of a strong immunization, Marie attenuates or neutralizes the fresh fixed virus with anti-rabic serum, rendering it harmless, therefore he is able to inject very large doses. Remlinger, also, has used this method.

Marie states that for the production of an active serum, prolonged immunization is necessary; also, that if the vaccinations are intravenous better results will be obtained. For the production of his anti-rabic serum, sheep are vaccinated with fresh fixed virus neutralized with immune serum. Some injections are given intravenously about one week apart, while others are given subcutaneously. In making the intravenous injection it is necessary to filter the virus through linen to remove all coarse particles. His experiments seem to show that the intravenous vaccinations produce the most rapid and the strongest immunization.

After the sheep are immunized thoroughly they should be bled in about two weeks. The serum is then collected and prepared, the same as other immune sera. It may also be preserved with ½ per cent. of carbolic acid.

The efficacy of anti-rabic serum in preventing the develop-

ment of hydrophobia when the inoculations are not too intense or intracerebral, seems proven conclusively. In 1891, Babes and Cerchez reported that the blood of a strongly immunized dog would protect the majority of dogs against experimental inoculation. Tizzoni and Centanni have shown that the serum of an immune sheep will, when injected 24 hours before inoculation with street virus, protect rabbits, if used in the proportion of 1 part of serum to 25,000 of body weight. In large doses, they say it will protect rabbits against injections of street virus into the sciatic nerve, even after seven days. Babes reports the treatment of 26 persons who were terribly bitten on the face by a rabid wolf with only one death. Each patient was given 10 cc. of the immune serum.

Marie, as the result of numerous experiments, states that anti-rabic serum mixed with fresh fixed virus will produce a strong and lasting immunity. It might be well to mention one of his experiments: The brains of three rabbits dead of hydrophobia, representing 29 grams of fixed virus, were emulsified with 150 cc. of normal salt solution, then filtered through linen cambric to remove the coarse particles and then added 100 cc. of anti-rabic serum. This mixture was placed in the ice-chest for 20 hours, then centrifuged. The sediment was diluted sufficiently to make 133 cc. and injected into six dogs. Seventeen days later each dog received a second and last dose. After three months all the dogs resisted the intraocular test and were still living fifteen months later. Marie suggests the vaccination of dogs on a large scale by this method, as the immunity established by these two large vaccinations seems to be more or less permanent.

Marie reports 300 patients treated at the Pasteur Institute in Paris with most excellent results, the following method being used: One gram of fresh fixed virus was emulsified with 9 cc. of normal salt solution and filtered through linen. To 2 cc. of this mixture was added 4 cc. of anti-rabic serum which had been heated beforehand to 56 degrees Centigrade, making a mixture of 6 cc. This quantity was injected under the skin of the abdomen four days in succession, after which

the regular Pasteur series was given, commencing with the sixth day cord.

From the experiments cited above it will be seen that anti-rabic serum may be used as a preventive, being given for the purpose of producing a passive immunization. It may be used, also, with the regular Pasteur series, or according to Marie's method of attenuating the fresh fixed virus.

Report of Cases Treated at the Georgia Pasteur Institute.

Adults and Children Receiving Equal Doses.

Face, 83; hands and bare feet, 416; through clothing, 168; total, 667. Proven rabid, 226; typical symptoms, 381; doubtful, 26; proven not rabid, 4.

4 children developed hydrophobia during treatment; 1 child developed hydrophobia 1 week after treatment completed; 3 adults developed hydrophobia 2 to 6 weeks after treatment completed.

Adults, Receiving, in Proportion to Weight, Larger Doses.

Face, 32; hands and bare feet, 195; through clothing, 98; total 295. Proven rabid 202; typical symptoms, 90; doubtful, 18; proven not rabid, 3.

1 child developed hydrophobia on tenth day of treatment.

Pasteur Treatment Combined with Anti-Rabic Serum.

Face, 18; hands and bare feet, 67; through clothing, 0; total, 85. Proven rabid, 76; typical symptoms, 9.

1 child developed hydrophobia on third day after treatment completed.

Grand total, 1047.

During the past nine years we have treated 1047 persons, about two-thirds of whom were children. A larger proportion of the latter were bitten on the face and more severely than were the adults, the reason of which is obvious.

For the sake of comparison I have divided those treated into three groups, as follows:

(1) Adults and children receiving equal doses, regardless of age or weight.

(2) Adults receiving larger doses than children in proportion to weight.

(3) Same as group (2) with the addition of anti-rabic serum administered during the first four days of treatment.

Of the 1047 patients, 667 belong to the first group, 295 to the second, and 85 to the third. Those belonging to group three and therefore receiving the anti-rabic serum in connection with the Pasteur treatment were either bitten on the face or else had been wounded severely on the bare hands or feet, the animal being demonstrated rabid in all but 9 cases.

In comparing the three classes of patients and their treatment, it must be remembered that those receiving the serum were very severe cases.

We will consider first the 667 cases receiving the customary dose, the same for adults and children. Of these, 83 were bitten on the face, 416 on the bare hands or feet and 168 through the clothing. The animal was proven rabid in 226 cases, typical symptoms were present in 381, doubtful in 26, and the animal proven not rabid in 4. Four children, three having been bitten on the face and one on the hands, developed hydrophobia during treatment before immunity could be established. One child developed the disease one week after treatment, also before immunity was fully established. Three adults, all men and two in a very low state of health, succumbed to the disease two to six weeks after treatment.

It is interesting to note that only in children did the disease develop before the establishment of immunity, while the adults succumbed after that period.

In considering group two, we find that 32 of the 295 patients treated were bitten on the face, 195 on the bare hands or feet and 98 through the clothing. The dogs were proven rabid in 202 cases, typical symptoms were present in 90, doubtful in 18 and proven not rabid in 3. Of this group, one child, bitten on the face, developed hydrophobia on the tenth day of treatment, and none of the patients died after sufficient time for immunization.

The number treated in group three is rather small, but, as stated above, the bites in almost all cases were either severe or were on the face. Of the 85 patients thus treated, 18 were bitten on the face and 67 on the bare hands or feet. The animal was rabid in 76 and typical symptoms were present in 9 instances. One child, bitten severely on the face, developed hydrophobia on the third day after treatment was completed.

While the number of cases reported above is small compared to that of some of the larger Pasteur Institutes in the European countries, yet I think that they are of value. It is certain that a much larger proportion of patients whom we treat really need treatment than is the case with the larger state Institutes, like that of the Institutional Pasteur of Paris. It is also probable that we keep in closer touch with patients after they leave and are therefore more likely to hear of a death, making the statistic more accurate.

In considering the results obtained, they seem the most favorable in groups two and three, especially in adults where they receive larger than the ordinary doses. Marie, especially, has shown by his experiments on animals, that larger doses than those given in the Pasteur treatment will produce stronger immunizing powers. It has been demonstrated that the more virulent the fixed virus when injected the greater the immunity. This is to be expected, since it is unreasonable to suppose that a micro-organism may be injured sufficiently to prevent its multiplying and all of the antigens remain intact.

In group three the anti-rabic serum is made according to the method of Marie and is given with a view of producing a passive immunization, to hold the disease in check until an active immunity can be established. The experiments of Tizzoni and Centanni seem to show that in animals the disease may be prevented from developing, in a large proportion of the cases, by the administration of the immune serum alone. This is not unreasonable when we remember the prophylactic value of tetanus antitoxin, which is supposed to only neutralize toxin and not to act in a bactericidal manner.

Anti-rabic serum being anti-microbic in its action, it is possible that it might destroy the hydrophobia germs in the tissues, provided it should come in contact with them. Hence the suggestion made by some that the serum should be injected in and about the site of the wound. In severe cases I believe this would be a good procedure, but so far I have never done this. Anti-rabic serum will destroy the virus in a test tube in a few hours and it is conceivable that it will do the same in the tissues if brought in direct contact with the germs.

I wish to state, in concluding, that when I commenced giving the Pasteur treatment ten years ago, a slight doubt existed in my mind as to its value. I knew that statistics were much in its favor, but still there was a doubt. Now, I am absolutely convinced of its efficacy. I will give you one of the reasons. During the past nine years it is certain that we have treated at the Georgia Pasteur Institute more than half of those bitten by rabid dogs in Georgia, two-thirds would probably be correct. Of these, two died before, and two after, complete immunization. During these same nine years more than 55 people who did not take the Pasteur treatment succumbed to hydrophobia. It must be remembered, also, that a larger per cent. of those bitten severely take the disease, and such cases are more likely to seek a Pasteur Institute, thus making a showing still more favorable to the Pasteur treatment than at first sight.

PRELIMINARY REPORT ON THE USE OF AN ANTI-RABIC SERUM.

BY J. EDGAR PAULLIN, B. A., M. D., ATLANTA.

The brilliant results obtained by the use of anti-tetanic and anti-diphtheritic sera have caused many bacteriologists to devote a great amount of time and study towards the production of a serum which would be active against the organism of rabies, or hydrophobia.

It is unnecessary to say that the constant demand for such a serum is almost imperative, for, despite the fact of the gradual disappearance of superstition from medicine, there are still some few, chiefly among the laity, who do not believe that there is such a disease as hydrophobia; and some who still trust to the efficacy of the mad-stone.

In the production of an anti-bacterial immunity to any infection, we require the organism in a pure culture: in the production of an active anti-toxic immunity, we require a pure toxin; consequently, in the production of an active immunity to hydrophobia, we are placed at a great disadvantage, for we have neither a pure culture of the organism, nor are we able to obtain a pure toxin.

Since the discovery, in 1903, of Negri, stating that certain bodies were generally present in the large nerve cells of animals dead of hydrophobia, a great deal of discussion has been occasioned as to the nature of these bodies: one view maintains that they are protozoan parasites; the other is that they are evidences of some specific degeneration. No attempt will be made in this paper to discuss the question, either for or against either theory—suffice it to say that I am inclined to consider the Negri bodies as a specific degeneration, and not a form of protozoan parasite. I also believe that the organism causing this disease is an ultra-microscopic one, and yet to be isolated.

From the cuts, you may see these bodies as they have been drawn from specimens in the laboratory. The Negri body varies in size from 1 to 30 microns. It has a distinctive acidophylic ground substance, and generally placed within this ground substance one finds basophilic round bodies, or thread-like bodies. The largest bodies, as a rule, are found in those cases that possess the least virulence.

In producing an immunity to rabies we are forced to use as a pure culture of the organism that portion of the animal where the poison, whether bacterial or toxic, is most concentrated. Since this has been shown to be the central nervous system, we used an emulsion of the brain of rabbits dead of hydrophobia for the following experiments:

Two healthy sheep were obtained, and injected as follows: one being injected subcutaneously, and the other as recommended by Goltier, Nocard and Roux, intravenously, for a period of two weeks; then each received the same subcutaneous injections in the same manner.

The following table gives the dates, and the amount of each injection:

White Sheep.

Jan.	4,	10cc.	5%	Emulsion,	heated	to	70C.	35	min.
"	5,	10 "	5 "	"	"		70 "	35	"
"	6,	10 "	5 "	"	"		65 "	35	"
"	7,	10 "	5 "	"	"		65 "	35	"
"	8,	10 "	5 "	"	"		60 "	35	"
"	9,	10 "	5 "	"	"		60 "	35	"
"	10,	10 "	5 "	"	"		57 "	35	"
"	11,	10 "	5 "	"	"		57 "	35	"
"	12,	10 "	5 "	"	"		55 "	35	"
"	13,	10 "	5 "	"	"		55 "	35	"
"	14,	10 "	5 "	"	"		50 "	35	"
"	15,	10 "	5 "	"	"		50 "	35	"
"	16,	½ inch	2	day cord	in	5cc.	Salt	Solution	
"	17,	½ "	3	"	"	" 5 "	"	"	
"	18,	½ "	4	"	"	" 5 "	"	"	
"	19,	½ "	4	"	"	" 5 "	"	"	
"	20,	½ "	3	"	"	" 5 "	"	"	
"	21,	½ "	2	"	"	" 4 "	"	"	
"	22,	½ "	2	"	"	" 5 "	"	"	
"	23,	1 "	3	"	"	" 5 "	"	"	
"	24,	5%	Brain	Emulsion,	5 "				
"	25,	5 "	"	"	10 "				
"	26,	5 "	"	"	10 "				

"	27,	5 "	"	"	5 "
"	30,	5 "	"	"	10 "
Feb.	1,	5 "	"	"	20 "

BLACK SHEEP.

Jan.	4,	1: 10,000	Sol.	Brain	Emulsion,	10cc	intra-venously
"	5,	1: 8,000	"	"	"	10 "	"
"	6,	1: 6,000	"	"	"	10 "	"
"	7,	1: 5,000	"	"	"	10 "	"
"	8,	1: 2,000	"	"	"	10 "	"
"	9,	1: 1,000	"	"	"	10 "	"
"	10,	1: 500	"	"	"	10 "	"
"	11,	1: 200	"	"	"	10 "	"
"	12,	1: 1,000	"	"	"	10 "	"
"	13,	1: 500	"	"	"	10 "	"
"	14,	1: 200	"	"	"	10 "	"
"	15,	1: 100	"	"	"	10 "	"
"	16,	1: 500	"	"	"	10 "	"
"	17,	1: 200	"	"	"	10 "	"
"	18,	Treatment was the same as the other sheep.					

Unfortunately an opportunity to test the immunity developed by the two methods of treatment was lost on account of the death of the black sheep one week after treatment was finished from puerperal infection.

In order to study the immunity which was developed in these animals after the cessation of the injections, it was necessary for us to obtain, as nearly as possible, a solution of fixed virus having, practically, a standard strength.

We used in the following experiments the formula recommended by A. Marie, of the Pasteur Institute in Paris—a man whose painstaking and careful work on the production of an anti-rabic serum is monumental. He makes a 1 per cent. solution in normal salt of the rabbit's brain, dying from hydrophobia on the ninth day after the injection of the fixed virus. This is then filtered through one thickness of filter paper, and was used for the following experiments:

Experiment No. 1 was performed in order to determine, if possible, the relative amount of immunity possessed by the sheep three days after the treatment was administered. On February 4th, 50 cc. of blood was obtained from the jugular vein of each sheep. It was allowed to coagulate, and the clear serum used as follows:

		Inoculated		Result	
Guinea	Pig	1	Feb. 2,	Rabid	Feb. 15
"	"	2	" 2.	"	" 16
"	"	3	" 2.	"	" 12
"	"	4	" 2.	"	" 12
"	"	5	" 2.	"	" 12
"	"	6	" 2.	"	" 10
"	"	7	" 2.	"	" 10

Pigs numbers 1 and 2, inoculated subdurally with 4 drops of the following mixture: virus 1 cc., serum 2 cc., allowed to stand 30 minutes at room temperature.

Pigs number 3 and 4 received 4 drops of the following mixture: virus 1 cc., serum 1 cc., allowed to stand 30 minutes at room temperature.

Pigs numbers 5 and 6 inoculated with 4 drops of the following mixture: virus 1 cc., serum 0.5 cc., allowed to stand 30 minutes at room temperature.

Pig number 7 inoculated with 4 drops of virus 1 cc., allowed to stand at room temperature 30 minutes.

We see from this experiment that the immunity which follows the subcutaneous inoculation of virulent material is not immediately evident after the completion of the injections. We do see, however, that with large amounts of the serum we are able to delay for a few days development of rabies.

Guinea pigs were used for testing the activity of the serum because the sheep, having been injected with the spinal cord and brain of rabbits, there would be a neurolytic action developed in the blood of the sheep for the rabbit. This was shown in our experiments by the fatal result following the injection of the rabbits with the sheep serum alone. Of eight rabbits injected, six died within twelve (12) days.

On February 18th, one (1) liter of blood was removed from the white sheep, and tested as follows:

G. P.	9	Fixed	Virus	1cc				Rabid	9th	day
"	"10	"	"	1 "				"	"	"
"	"11	"	"	1 "	plus	1cc	Anti-S	living		
"	"12	"	"	2 "	"	1 "	"	"		
"	"13	"	"	3 "	"	1 "	"	"		
"	"14	"	"	4 "	"	1 "	"	"		
"	"15	"	"	5 "	"	1 "	"	"		
"	"16	"	"	6 "	"	1 "	"	"		
"	"17	"	"	7 "	"	1 "	"	"		

"	"18	"	"	8	"	"	1	"	"	"	
"	"19	"	"	9	"	"	1	"	"	"	
"	"20	"	"	10	"	"	1	"	"	"	
"	"21	"	"	11	"	"	1	"	"	Rabid	23d day
"	"22	"	"	12	"	"	1	"	"	"	22d "
"	"23	"	"	13	"	"	1	"	"	"	22d "

It is seen from this experiment that the serum from this sheep was successful in protecting a guinea pig when mixed with ten times its volume of fixed virus.

Another experiment was attempted to see if it would be possible to protect a guinea pig from an inoculation of fixed virus into the sciatic nerve. It must be borne in mind that the period of incubation in successfully inoculated animals varies greatly, so that one obtains no constant results in a few experiments. We have used, however, large numbers of these animals in this work, and have been able to obtain a fairly constant incubation period, as is shown by the following experiment:

A series of twelve (12) guinea pigs were subcutaneously inoculated in the region of the right sciatic nerve with 1 cc. of a 5 per cent. solution of fixed virus. Four were kept as controls; of these four, three died; one on the 17th day, and the other two on the 19th day, of rabies. One lived for 29 days and died from other cause than rabies.

Four of the other pigs were treated as follows: 10 hours after injection, they were given, intra-peritoneally, 2 cc. of a 1:10 serum. This was repeated in 12 hours and again in 36 hours. Each pig received three doses of 2 cc. each of the serum. Of these pigs, two developed hydrophobia on the 38th day after injection, and the other two are still living.

The third lot of four pigs were injected as follows: 2 cc. of a 1:10 serum 24 hours after injection, 2 cc. in 48 hours; 2 cc. in 72 hours; 2 cc. four days afterwards and 2 cc. five days afterwards. One pig died of some cause other than rabies. Of the other three, they are living, 42 days after having received the fixed virus.

We see from these results that it is possible to delay the development of rabies in animals which have been infected with fixed virus; and it would seem, also, that by the use of

the serum alone it is possible to prevent the development of rabies for at least 42 days (the longest period of time that our animals have lived to date).

It has been shown, however, that the serum possesses its greatest activity when it is freshly drawn from the animal; and by numerous experiments, we have shown that the 1:10 serum begins to lose its strength after keeping it on ice for one month, so that now the serum prepared one month ago protects in the proportion of 1:8.

Since the opening of the Pasteur Department of the State Board of Health on June 19th, 1908, we have treated to date, free of charge, three hundred and ninety-two (392) persons bitten, or infected with rabid virus; with only one death; and this death is attributed to a carelessness of the patient in taking the treatment.

Recently, we have used for severe bites about the neck and face the Pasteur treatment plus the serum made at our own laboratory; by the use of the serum, we are enabled to produce in the patient a certain amount of passive immunity to hydrophobia; an immunity sufficient to protect that patient until the Pasteur treatment causes the individual to develop his own more or less active immunity to the disease.

The conclusions that seem justified from the brief recital of these experiments may be summarized as follows:

1. That it is possible to produce an anti-rabic serum.

2. That the immune body is not present in the serum immediately after the completion of treatment of the animals, but that it is developed to a marked degree within three weeks.

3. That it is possible to protect a guinea pig infected with a known amount of fixed virus for a period of 41 days by the use of an anti-serum alone.

4. That the field of usefulness for human beings of this remedy seems to be in delaying the development of hydrophobia until the patients are immunized by the Pasteur treatment.

I wish to thank particularly Dr. H. F. Harris, Secretary of the State Board of Health and Director of the Labora-

tories, for his help, suggestions and encouragement in this work, and Dr. Willis F. Westmoreland for his interest and timely encouragement.

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Roux, Annals Past. Inst. II, 1888, p. 479.

Williams, Jour. Inf. Diseases III, p. 452.

Discussion.

Dr. Claude A. Smith, Atlanta: I wish to thank the essayists for these two most interesting and scientific papers. They were of especial interest to me on account of my work with this disease in connection with the Pasteur Institute in Atlanta. These excellent papers show valuable work along

this line, and I congratulate them, but there is a side to the subject which I think of extreme importance which we should consider in this connection, and that is the prophylactic side. As the Secretary of the Institution, it was my unpleasant duty to be thrown in contact with these patients, and those of you who have not been engaged in this work can not realize the amoun of distress, anguish and sufferings occasioned by this disease.

It has been demonstrated in England and Germany that by the simple muzzling of dogs this disease can be stamped out. If it is on the increase in Georgia is there any reason why we should not have a law requiring all dogs to be muzzled for a certain length of time, say six months or a year? Naturally if we muzzle all dogs at the present time in the State of Georgia, in six months the disease will have died out here, because those inoculated at the present time will have been gotten rid of, and the disease will cease to exist. This has been demonstrated in other countries and there is no reason why we should still have the existence of a disease here if it can be so easily stopped. This prophylactic treatment is being adopted in some parts of this country. The muzzled dog can eat and drink; there is no cruelty to the animal at all, but it can not bite. If the disease develops, the animal dies in a few days and as it can not bite the disease dies with it.

I am sure the essayists will agree that the only rational procedure is to muzzle the dogs, wipe out the disease and stop this suffering and death. Therefore, I suggest the following resolution:

Whereas, these most interesting and valuable papers just read giving reports from the Georgia Pasteur Institute and the State Board of Health, indicate that there is a marked increase of rabies in the State of Georgia; and

Whereas, it has been demonstrated in England and other countries that this disease can be stamped out by the muzzling of dogs; therefore, be it

Resolved, That the Medical Association of Georgia directs that its Committee on Public Policy and Legislation

take up the matter of having enacted the Bill which was introduced before the Legislature at the last session requiring the muzzling of dogs.

This was amended by Dr. F. W. McRae as follows:

That if in the judgment of the committee it be wise, it shall secure the co-operation of the daily press in disseminating knowledge regarding this disease and thus assist in the enactment of the Bill.

This resolution was unanimously adopted.

Dr. L. M. WARFIELD, Savannah: Personally I have been extremely interested in these papers on rabies, not that I have done any particular work on the subject, but because I have had an opportunity to follow some work that has been done in the Bacteriological Laboratory at St. Louis. Dr Paulin says he doesn't believe these Negri bodies are specific for the disease, but rather a specific degeneration product. That is a very interesting observation in view of the fact that Dr. Harris in St. Louis has devised a stain which has the property of staining these bodies not only in the nerve cells in the brain, but also cells quite similar to these bodies found in the peripheral circulation. I have seen these bodies in the vessels of the kidney, liver and other internal organs which are so much like the bodies found in the nerve cells themselves that it was impossible to state whether they were Negri bodies or a specific degeneration product. Dr. Harris had a letter from Dr. Councilman stating that he believed them to be post-mortem changes.

The subject, particularly in this part of the country, is of great importance and I would emphasize, as Dr. Smith has, the importance of prophylactic measures for stamping out the disease. It has been shown that the disease can be absolutely stamped out and it would seem the part of wisdom that we in Georgia should take every means in our power to eradicate it.

Dr. F. W. MCRAE, Atlanta: I agree with what the gentlemen have said with reference to prophylaxis against this disease. I had a very disagreeable experience in my own ken-

nels. I had four very fine dogs which cost me considerable money and that I was very fond of. For several days they were having constant fights. My son was caring for them and every day he was in among them separating them. He did this many times and did not get a scratch on him. It was only after the dog was out of the kennel that I realized the trouble. I then proceeded to try to save my other dogs which had been bitten and infected. I sent them down every day to Dr. Brawner to inject them, but they were so infected that they could not be saved.

Now it is impossible to pass a dog law unless the doctors get behind it. The English have to send over here to get virus because no dog is allowed to be brought in there unless kept in a pound under observation for a definite time. It is a most important thing that we should get a good muzzling and taxing dog law.

Dr. James N. Brawner, Atlanta (closing): The serum I have used at the Institute has been prepared according to the method of Marie.

As to the Negri bodies, I do not think they are specific degenerations. If they are degenerations, they are the most symmetrically formed I have ever seen in pathological tissue.

Unless a person is connected with the Pasteur Institute, he can hardly realize the importance of rabies in this State and in other States. It is very prevalent and if the State doesn't do something about muzzling dogs we will have the same trouble that they are having in Italy.

Dr. J. E. Paullin, Atlanta (closing): I purposely omitted in my paper a discussion of the Negri bodies as to whether they are protozoan parasites, or specific degenerations of the nerve cells. The weight of evidence at the present time seems to be in favor of the theory that they are degenerations. As with many other things in medicine, this is as yet unsettled, and perhaps work that is now in progress will be of assistance in solving this problem.

In regard to the law to muzzle dogs, I agree with Dr. Brawner in the statement that it is high time that the authorities should take this matter in hand and pass suitable

laws, in order to protect the lives of many of our citizens from the bites of worthless and infected animals. Statistics show that this is the only possible way to effectually stamp out this disease.

A CASE OF TETANUS TREATED WITH SPIRITS OF TURPENTINE.

BY C. P. WARD, M. D., ATLANTA.

Mr. President: In reporting this case of tetanus I shall not attempt to describe the disease or go into an extensive history of it. We all know the cause of this disease and can not easily mistake its symptoms.

Prior to the use of anti-tetanic serum 80 to 90 per cent. of all cases resulted fatally, while according to late statistics its use has lowered the mortality to 25 to 60 per cent.

Dr. A. P. Heineck, of Chicago, in the February and March numbers of the *Atlanta Journal-Record of Medicine* reports a number of cases of tetanus treated by sulphate magnesia successfully. However, 9 cases show a mortality of 44 per cent., while 4 other cases show a mortality of 75 per cent. In Dr. Heineck's own case he used 52,000 units of the serum in 8 days in connection with the magnesium-sulphate, claiming that the spasms were decidedly lessened after the injection of the latter. He says: "I can not but be of the opinion that the magnesium-sulphate was a contributory factor to the patient's recovery."

The local use of spirits of turpentine in tetanus was advocated by the late Dr. J. McF. Gaston. The National Formulary gives as physiological action of turpentine its rapid absorption and its characteristic effect on the nervous system; that is, in small doses it stimulates—in large doses it paralyzes and causes loss of muscular force and co-ordination.

Binz has shown that large doses of it prevent or control the spasms of Brucia. It is used extensively in sciatica and neuralgias, although its modus operandi is unknown—probably because of its specific action on the nerve tracts.

Case I.—Mrs. W. A. B. Age 46. Family history nega-

tive. Past history, rheumatism for several winters, otherwise negative. Present history, she had been stiff in muscles of body for some time. Stiffness increased to rigidity of the muscles on December 17, 1907. This continued to increase for 24 hours, when I was called in, December 18th. Under rheumatic treatment the patient improved for 24 to 36 hours.

December 20th—Spasmodic pain developed in diaphragm and deeper layers of abdominal muscles.

December 21st—Developed tetanic pains in right leg and abdominal recti muscles, when a history of a nail wound in the right foot was elicited. The injury occurred December 8th. Slight suppuration on 10th and 11th was followed by healing next day. On learning of this history I injected 20 m. of spirits of turpentine into the wound. This was followed immediately by violent spasmodic pains, which soon lessened, and the tetanic paroxysms diminished in intensity and frequency.

December 22nd—The patient's condition was improved, but the foot was still red and swollen.

December 23rd—Her general condition was still improved, but the foot being still much swollen and painful, the wound was opened and thoroughly curetted, packed with gauze and hot poultices applied.

On December 25th the foot was dressed with camphophenique and poultices left off.

December 27th—The pains increased in leg and abdominal muscles. The wound was packed with gauze saturated with turpentine, and hot fomentations applied. The first effect of this treatment was to increase the pain in the foot, followed again by lessening tetanic symptoms.

On the 29th the wound was dressed as before, discontinuing the fomentations. This treatment was continued until January 5th, when the patient's condition was so much improved that the turpentine dressing was replaced by a dry one.

January 12th—The tetanic symptoms again appeared and the turpentine dressing was applied as before, resulting again in subsiding symptoms and complete recovery within a month.

During the course of the disease I used one-quarter to one-half grain of morphia-sulphate occasionally for pain, and bromias and chloral for a short while; also a few injections of physostigmine 1/50 of a grain. These latter were used to control the spasmodic condition, but I noted no appreciable effect.

THE USE OF FATS IN THE TREATMENT OF STOMACH DISEASES.

BY WILLIAM R. HOUSTON, M. D., AUGUSTA.

I must ask the indulgence of the Association in presenting to it a paper of such an elementary character. My excuse is that I have found that the simple principles of feeding to be discussed are not infrequently forgotten.

It is commonly understood that fats are indigestible. The popular conception of the indigestibility of a food coincides with the objective finding that the food considered to be indigestible is detained a longer time than usual in the stomach. We have learned that the pyloric sphincter, with an almost incredible insight into the chemical and mechanical properties of food stuffs, will open to permit the passage through it only of those portions of the gastric contents that have attained such a degree of comminution and chemical structure as adapts them to intestinal digestion. Water passes rapidly and uninterruptedly through the stomach. Solids are reduced to the consistence of a thin gruel. If solids and liquids are taken together the liquid passes on, the solids are detained till chymification is complete. Doubtless all of us have observed that provided no question of gastric stasis is concerned, it matters little with the Ewald-Boas test breakfast how much fluid is given with the roll. The mixture of bread and gastric juice will have about the same consistency at the end of an hour in a normal stomach whether one or two or three glasses of water be taken with the meal. The selective play of the pyloric sphincter is seen with especial clearness in the case of fatty foods. No foods pass more sluggishly from the stomach than the fats. In studying the action of the pyloric sphincter in a dog provided with a high duodenal fistula it may be observed that when a mixture of fat and water, emulsified as thoroughly as pos-

sible by shaking, is fed the dog the water passes out into the intestine, leaving the fat behind. In using Sahli's test soup, his so-called butyrimetic determination of gastric motility, I have had occasion to observe practically this behavior of the stomach toward fats. This test contemplates determining the motility of the stomach by a quantitative estimation of the amount of butter remaining in the stomach at the expiration of an hour after the administration of a test soup composed of flour and butter. The great practical obstacle in applying this test and one which renders it after all of doubtful availability is the difficulty found in so thoroughly emulsifying the butter fat as to avoid the sources of error arising from this capacity of the stomach to pass into the intestines the watery and carbohydrate elements of the soup while leaving the butter behind. It has sometimes happened with me in attempting to apply this test that a larger portion of butter was recovered from the gastric contents than was given in the original soup. We see here illustrated the first of the qualities of fat to which I wish to call your attention: namely, that fats pass tardily from the stomach. Fats are not, however, all alike in this regard. The fats with low melting point are more digestible than those of high melting point and in saying digestible let us bear in mind that we mean always they pass more rapidly through the stomach. The oils of cotton seed and olive are more digestible than pork and mutton fats. It is well known to all who suffer from disturbances of gastric motility that pork and fried foods belong to the most indigestible of food stuffs.

There is a second reason, however, why fried foods are indigestible. Foods that are fried or otherwise cooked in fat become, as it were, hermetically sealed in a fatty envelope. Now, since it is necessary that by the solvent action of the gastric juice all solids be reduced to a state of finest subdivision before they are permitted to pass the pyloric sphincter, this envelope of fat becomes a most obstinate barrier to the necessary comminution of the food. There being practically no fat digested in the stomach, the gastric juices find no means of penetrating the coating of fat to exercise their di-

gestive action on the enclosed proteids and connective tissues. In the consideration of these two obstacles to the disposal of fats by the stomach we find the principal reason for the well known indigestibility. If our attention were concentrated on these properties alone we might dismiss the fats as being generally unsuited to the diet of gastric sufferers. We shall see, however, that the fats have other properties which render them very useful to our dietary; so indispensable, in fact, that we must urge them upon our patients oftentimes even at the cost of aggravating for the moment the discomforts that may arise from delayed emptying of the stomach. For in questions of dietetics we must always bear it in mind that the ultimate nutritional value of a food need not be lessened by the subjective discomforts experienced in its gastric digestion. A grain of fat will develop its 9 calories of body energy though the man who takes it may groan of the process of its digestion.

The first of these other properties to be considered, however, and one that operates still further in retarding gastric digestion. In 1886, Ewald and Boas announced the discovery that the fats are inhibitors of gastric secretion and that the secretion of hydrochloric acid is materially diminished by the ingestion of fat. A T. A. of 75 may fall to 40 if oil is given before or with the test meal. This is accomplished by direct action of fat considered as a chemical on the secretory nerves. The normal repulsion that most people experience in taking fats or oils in the pure state serves still further to inhibit the secretion of gastric juice by acting against the flow of psychic or appetite juice.

In the second place, oils taken into the stomach form a mechanical coating over the mucosa that not only prevents the flow of the juices but also interferes with the absorption of absorbable matters. Unlike water, alcohol, as we know, is in considerable part absorbed directly from the stomach and this physiological fact indeed forms the basis of our customs of alcoholic conviviality, for if it were necessary to await the tedious process of the conveyance of this stimulant to the intestines before its exhilarating effects were experi-

cined, advocates of the temperance cause would doubtless find their propaganda easier to maintain. Now it is well known that by taking a considerable amount of olive oil before entering a company where feats of potatory prowess are expected, the action of the alcohol may be so much delayed that the weakest head may drink on equal footing with the most experienced tippler. The absorption of alcohol through the gastric wall has been prevented by the barrier of oil that has diffused itself into a coat over the entire mucosa. Since recent experiments have shown us that as much as 30 per cent. of peptonized proteids is absorbed before leaving the stomach we may argue with great probability that this absorption would be greatly deferred by the presence of unemulsified fats in considerable quantities in the stomach.

In these inhibitory and protective properties of fats, however, while they operate to render digestion more difficult, we find something that we may turn greatly to our account in therapeutics. We see, in the first place, that fat is an antacid. Where the secretion of stomach juice is excessive or where the proportion of acid in it is too high we find in the fats a natural food of the utmost value in controlling the hyperacidity and the hypersecretion. In the second place, the oils may be used for their soothing and protective action. If the stomach wall be eroded or ulcerated we have in fat a protective covering against irritants from the side of the gastric secretion as well as against irritating matters in the food.

A third most important therapeutic standpoint from which the fats are to be regarded is as nutriment. This becomes strikingly apparent when we consider that the energy value of the fats as compared with the proteids and carbohydrates is as 9.3 to 4.1. Undernutrition is perhaps the most important problem in dealing with the majority of gastric troubles, for the great majority of gastropathies are functional rather than organic. In cases of nervous dyspepsia and atony of the stomach the problem presented the therapeutist is to interrupt the vicious circle that has established itself. The patient has dyspeptic discomforts. He fears to

eat. His nutrition declines. With the decline in nutrition the nervousness and gastric myasthenia become more and more aggravated. Our best means of breaking into this vicious circle and improving nutrition is by the administration of considerable quantities of fat. Unless we constantly familiarize ourselves with the tables of caloric value we are apt to form very erroneous notions as to the relative food values of common articles of diet. I must ask your pardon for calling attention to some of the most elementary of these values. The yolk of an egg by reason of its high fat content, though it is but half the weight of the white, contains more than twice the food value. A glass of cream has more caloric value than the whites of twenty-five eggs. A glass of cream has more caloric value than one and one-fourth pounds of rare beefsteak. Four ounces of butter is worth more than one and one-half pounds of cooked rice. One tablespoonful of cotton seed oil is worth as much as an average sized glass of milk or a liberal serving of beefsteak. Thus, we see that if the problem before us is to administer a concentrated nourishment the solution will be found most simply by giving fat.

In addition to these therapeutic uses of fats that may be derived from a consideration of their physiological action, the fats have properties that apply especially to morbid conditions. One of the most trying symptoms in round ulcer of the stomach and in fissures at or near the pylorus are the spasms of cramping pain. Against these pains oil administered, as cotton seed oil or olive oil, seems to exert a specific influence. Whether it be through the action of the oil directly on the motor nerve reflex or through its protective and lubricating properties it is not decided. About thirty per cent. of ulcers lying on the posterior wall of the stomach induce an ulceration of the opposed anterior surface. The oil doubtless prevents the friction of these opposed surfaces. The old question in regard to the pathogenesis of gastric ulcers as to whether the ulcer causes the hyperacidity or is the effect of an antecedent hyperacidity seems to be decided in favor of the latter hypothesis, that the acidity antedates the

ulcer but with the introduction of a new factor into the problem. It has been found that where hyperacidity was especially associated with pain, in what might possibly be termed the pre-ulcerative stage of hyperacidity, there is to be observed a pathological deficiency in the secretion of mucus. It seems that a certain amount of mucus must be normally poured out upon the stomach wall to protect it against the action of the gastric juice. We have all seen cases where the treatment shows normal acidity while the subjective symptoms of the patient would suggest hyperacidity. In such cases we will often find a diminution in the secretion of mucus. In the absence of this normal mucus secretion or gastric amyxorrhea various means have been proposed to protect the gastric wall artificially. The favorable action of lavage by nitrate of silver solutions is probably due to its stimulating the flow of mucus and the salts of bismuth have been especially recommended and have found a wide use in allaying gastric discomfort long before this explanation of their action was understood. The administration of fat, however, in the form of oil before meals has a number of advantages over either of these agents. The oil is a food and will serve the double purpose of diminishing the acidity and supplying to the gastric mucosa the protective coating that is lacking.

Methods of Administering Fat.

When we come to consider the question of administering fats, the time when they should be given, and the form in which they should be given, the most important fats from the dietetic standpoint are the egg fat and the butter fats. In the form of milk we have a perfect emulsion of fat in which the fat represents more than one-half of the total nutritive value. The prompt coagulation of milk in the stomach prevents separation of the fat from the emulsion so that as the coagulum is gradually dissolved away from without inward the fat passes at an equal rate with proteids and carbohydrates into the small intestines. The design of coag-

ulation in the scheme of digestion is evidently to retard the passage of the milk until the peptonization of proteid is complete. In case we should wish to spare the stomach at the expense of the intestines it has been suggested that the use of citrate of soda, which concentrates the calcium salts essential to coagulation, might prevent the coagulation of milk and thus allow it to pass like water undelayed into the intestine. This may be possible in very mildly acid stomachs, but with normal gastric juice I have found it impossible to do more with citrate of soda than make the coagulum somewhat more flocculent. Where buttermilk is for any reason considered preferable to sweet milk the loss of caloric value occasioned by the removal of the cream may be made good by the addition of cream or by the use of artificial buttermilk made from whole milk with lactic acid.

Where the action desired is pre-eminently nutritive and mildly antacid, cream is the form in which fat may best be administered. In general it may be said that cream is to be preferred to any of the bottle emulsions of fat. It is much cheaper and vastly more palatable and there are very few stomachs that will be more disturbed by taking cream than by any emulsion of cotton seed or cod liver oil. In cases of dyspepsia that are characterized by loss of weight, moderate disturbances of gastric motility and moderate degrees of hyperacidity the use of from eight to twelve ounces of 23 per cent. cream together with the yolks of one-half dozen eggs and the appropriate hygienic directions will usually suffice to bring about the prompt restoration to health. The cream may be taken with cereals, in cocoa with milk, or how the patient wishes. The eggs are most easily digested when administered soft-boiled, though eggs in any form are easily digested and it is a mistake to suppose that there is any special magic in taking them raw. With this mild dietetic prescription we have given our patient already nearly half of his caloric requirements. Where our principal indication for the use of fats is for their nutritive value, in addition to the yolks of eggs, which contain about 50 calories each, we must consider butter. One ounce of butter will contain about

250 calories. I have found it expedient to have the patient set aside in the ice chest from three to five ounces of butter to be consumed in the course of the day. It is best administered spread thickly on thin slices of bread or as the taste may suggest.

Leaving these more palatable fats we come next to consider the use of oils and especially of olive and cotton seed oils. The unpalatability of these oils is a very serious drawback to their use, but by encouraging the patient to persist in their employment, by making use of lemon juice, or a taste of wine after their administration, we usually find that they are taken with less and less repulsion. Little seems to be gained by attempting to present these oils in the form of an emulsion. Their palatability is not increased, but the bulk is, and the cost of the emulsion is practically prohibitory when it comes to using them in the quantities that are necessary for success. In the emulsion we lose the lubricating and protective properties of the oil to a considerable degree. As between olive oil and cotton seed oil, the cotton seed oil has the advantage of being considerably cheaper and the commercial salad oil made from cotton seed seems to be generally regarded as quite as palatable as olive oil. The indications for the administration of these oils are the same as for the use of cream with the additional advantages of their protective and anti-spasmodic qualities. Cohnheim was the first who, in 1902, recommended the use of the pure oil in cases of gastrectasy following stenosis of the pylorus and later also employed it in hyperacidity and ulcer. He recommends that in gastrectasy the oil be given once a day at body temperature and that it be introduced into the empty stomach in quantities of from three to five ounces. If the patient in the course of the day has a recurrence of spasm or distress an additional two ounces may be given at bedtime. In mild cases the patient receives a wine glass full an hour before breakfast and before dinner and supper from one to two tablespoonfuls. Oil used in this way has been found of special value in stenosis of the pylorus with secondary gastrectasy. The cramping pain often disappears after the first adminis-

tration of oil. Even in cases of malignant stenosis of the pylorus generally good results may be had from the oil treatment, through the diminution of the pyloric spasms and the improvement in nutrition. It is in cases of ulcer or erosion in the pylorus accompanied by spactic stenosis, however, that oil is of most striking value. I have seen several cases of ulcer that for years had resisted other forms of treatment yield in a short time to the oil therapy. It is to be recommended that before cases of pyloric stenosis be submitted to surgical procedures a thorough trial be given to this form of treatment.

There are certain cases and especially with patients of limited means where it is desirable to use the oils principally for their nutritive value, but where we do not wish to diminish or interfere with the secretion of gastric juice. In such cases it is well to give the oil as far from mealtimes as possble, in the middle of the afternoon or at bedtime, having the patient lie on the right side after taking the oil to facilitate its transit through the stomach. The tax which oil puts on the gastric motility is at times evidenced by its regurgitation and at times by a sense of nausea, but, as a rule, a little psychotherapy is sufficient to minimize or do away with these drawbacks.

I can not leave the subject without some reference to the use of oil by rectum. Oil has been used in the form of enemata with great success in the treatment of dysentery. I would refer to Rutherford's ————————. But in correction of stomach disorders it is chiefly in combating habitual constipation that we find it of value and it is crude cotton seed oil that I always use for this purpose on account of its very low cost.

Oil clysters operate according to Schmidt in his monograph on "The Study of the Feces," through the splitting off of fatty acids which develop a gentle stimulating effect on the wall of the large intestine. He regards this explanation as more plausible than the highly naive idea that the oil dissolves or softens the cibus. At all events, it may contribute to better evacuation by lubricating the mucous mem-

brane and these clysters form an important adjunct to our therapeutic resources, in those cases where the condition of the stomach renders it undesirable that we should place the patient on a cellulose rich diet. When we come to discussing, however, the behavior of fat in the intestine we are opening up a field for discussion too broad for the limits of this paper. I should merely like to call your attention to the fact that considerable fat may probably be absorbed through the large intestine. Dr. Tuttle, of New York, gives it as his experience that patients suffering from impaired nutrition due to a high intestinal fistula may have their weight rapidly increased by the administration of fat per rectum.

But since I find that these considerations are carrying us too far afield I shall close with the hope that some suggestions that I have made may prove of practical service.

Discussion.

Dr. L. M. Warfield, Savannah: There are two points that seem particularly valuable—one is the fact that the oils neutralize the hypersecretion of hydrochloric acid. We have been accustomed for a great while to treat our patients suffering with hypersecretion with large doses of alkalies. Alkalies have their uses undoubtedly, but where it is a case of undernutrition, as most of these cases are, the rational thing would be to give them oils rather than alkalies. The other point I would emphasize is that the fats we have at hand and can readily get are the best ones to use. The proprietary people have put upon the market various emulsions costing from fifty cents to two or three dollars a bottle, while, aside from the expense to the patient, of taking large quanities of these fancy fats, they do not do a bit more good and I doubt exceedingly if they do as much good as cotton seed oil, which is very cheap, and the cream of milk, which is more palatable. We do not need to go to the drug stores for these fats.

Dr. W. R. Houston, Augusta (closing): As to the difference between the use of emulsified fats and oil, the oil serves

us better as a protective coating in cases of ulcer or erosion. When it is purely a question of nutrition we may use the emulsified fats as being more palatable. In poor localities where cream may not be obtainable, we may use the nutritive value of cheaper oils.

ACCURACY IN THE DIAGNOSIS OF DISEASES OF THE CHEST.

BY LEWIS M. GAINES, B. S., M. D., ATLANTA.

Accuracy is one of the essentials of success in every calling. To the physician its value is beyond estimation both for his own sake and that of his patients. Accuracy presupposes both knowledge and skill, for it is a trait impossible of attainment by the ignorant and unskilled. But, alas! the possession of knowledge and skill by no means implies the attainment of accuracy, but necessitates the virtues of honesty and patience. A hasty examination because the waiting-room is full, a diagnosis based on conjecture rather than accurately ascertained facts—these are temptations and faults which account for many failures, and which too often react upon the patient to his detriment. Such failures are far less excusable than those of honest ignorance.

Aside from ethical considerations, however, I desire to urge the importance of accuracy in the diagnosis of chest diseases for the following reasons:

1. Because of the frequency of diseases of the chest. A far larger percentage of the human race die directly or indirectly of heart and lung diseases than of diseases of any other portion of the body. All honor to surgery and the magic advances she has made in the past half century, but except in comparatively rare instances surgery is powerless to influence in the slightest degree those affections of the chest which carry off such a very large proportion of mankind. It is from the physician rather than from the surgeon that aid must come, and it can only come through the portal of a correct and early diagnosis.

2. Perhaps the most potent reason for accuracy is that it is the surest way of arriving at an early and correct diagnosis. This is a matter of the first importance in tubercu-

losis, the early stages of which are overlooked in a large percentage of cases. It is needless to reiterate that a delayed diagnosis in consumption usually means a hastened end, whereas 70 per cent. to 90 per cent. of the early cases will get well under the best care. On the other hand, tuberculosis should not be hastily diagnosed. A boy of 14 was pronounced by several physicians to be in a hopeless stage of consumption. He drifted into my hands, and repeated and painstaking examinations revealed a large abscess in the upper part of the right lower lobe. This diagnosis was later confirmed by a surgeon, Dr. Willis Jones, of Atlanta, who saw the case with me. In many diseases of the heart a correct diagnosis can not be reached except by an accurate and prolonged examination. And correct diagnoses of heart lesions mean much more than a scientific refinement. It means prognosis and treatment based on something definite; it frequently means prolongation of life. In this connection, I desire to refer to life insurance examinations. A few years ago I heard a leading physician publicly refer to insurance examinations as "casual," meaning it was proper they should be so regarded. I am convinced by many personal experiences that the chest examination for insurance is eminently inaccurate. Six months ago I found a man to be in the second stage of pulmonary tuberculosis, who had been passed the week before by an examiner for a prominent company. The man died a few months later. Do not examiners owe their companies the most accurate chest examinations they are capable of making?

3. The progress or decline of many chest affections can only be intelligently followed by accurate examinations at regular intervals. This is particularly true of pulmonary tuberculosis. In many of these tubercular cases the symptoms do not accurately correspond with the real condition of affairs in the lungs. A patient may have gained his full quota of weight, and have most of his symptoms disappear. Yet on careful examination an area of moisture may be found, indicating an active process, and the necessity for the utmost caution, the lack of which will often result in re-

lapse. This is no fanciful statement, but is based on personal experience. So, also, in many forms of heart disease, from the patient's standpoint the greatest value attaches to repeated accurate examinations.

4. The question of prognosis can only be answered honestly after an accurate examination. It is not enough to inform a patient he has tuberculosis or heart disease. He must know what inroads the disease has made, how much lung tissue is involved, the degree of hypertrophy of the heart, and the stage his affection has reached—that is, he must know what his chances are, as nearly as they can be estimated. It is true that such questions are often impossible to answer. Nevertheless, accurate examinations will go far toward diminishing the number unanswered or wrongly answered.

5. As a means of determining the most effective treatment, the importance of diagnosis prior to treatment would seem to be beyond controversy. Yet it is a continual temptation to treat symptomatically, and not lay the axe at the root of the tree. As therapy is becoming more scientifically exact, the necessity for accurate diagnoses is becoming more and more imperative. Far be it from me to decry the efforts and achievements of our predecessors, but the general methods and shotgun prescriptions of former times can prevail no longer. Though far from the goal of our dreams, we now recognize certain definite procedures will be productive of certain results in certain cases. Hence the key to the door to relief and recovery lies in the accurate diagnosis. Here again I beg to cite the early diagnosis of tuberculosis as the chief hope of the victims of that prevalent scourge.

6. Finally, I venture to urge the value of well kept case records, which are invaluable personal assets to every physician. The very taking and keeping of such records fosters accuracy. Furthermore, such records are of great value for their own sake, and if compiled and edited would contribute their quota to our knowledge. It has long seemed to me that the physicians of the South should contribute far more largely than they do to the medical literature of our country.

How may accuracy be attained, seeing it is so important? First, by obtaining careful case histories. The getting of a first class history is almost a fine art in many instances. Often it takes time and patience, and such skillful interrogation as a lawyer might well envy. The object is to have the patient state only essential facts bearing on his malady without asking him leading questions. This is often very difficult, and yet a history so taken is of the highest value, as the first correct step.

Second.—Accuracy is to be attained by a painstaking physical examination which does not stop short of any procedure of demonstrable value necessary to clear reasonable doubts in the mind of the examiner. I am satisfied that the results of the examination should be charted. My own method is to stamp a skeleton chart on the history sheet and by a system of easily remembered symbols fill in the findings. Thus the outline of the heart as determined by inspection and percussion is drawn to correspond to its relative size and position. If murmurs are present their location, intensity and transmission are appropriately shown. So for the lungs, the exact areas of dullness, the location and character of rales, the character of the breath sounds, and other data can and should always be filled in. In no other way can an accurate examination be recorded and at the same time be so quickly available for reference.

There are certain points in the technic of examinations which I have been led to believe, by observation, are frequently imperfectly observed or neglected. To a few of these points I beg to call brief attention.

1. Examination for arterial changes associated with high blood pressure, hypertrophy of the heart, and accentuated aortic second sound. It is too frequently true in physical examinations, especially for life insurance, that the examiner is satisfied if there are no heart murmurs, and if no irregularities or increased rate of the pulse is apparent. It is a significant fact that the statistics of one of the largest insurance companies show that nearly 22 per cent. of the first year mortality of passed applicants are due to cardio-vascular

disease. Accuracy should be insured by diligent examination for arterial thickening, estimation of blood pressure by the sphygmomanometer, careful auscultation of the second sound at the base of the heart, and estimation of the size of that organ.

2. The true valuation of heart murmurs. In dealing with heart murmurs accuracy is often difficult of attainment, and yet very necessary for correct diagnosis, prognosis and treatment. The first distinction to be drawn is between functional and organic murmurs. I have been led to believe that mistakes here are very frequent. The second point in the valuation is the accurate determination of the valve affected, while the last to be remembered is that frequently the murmur is of less value in diagnosis than many other features of the examination, such as the ascertaining of the size of the heart, the characterstics of the pulse and of the heart sounds, and variations in the duration of the pauses between the beats. It is sometimes true that the silences of the heart are more instructive than its sounds.

3. The mode of examination for the earliest evidences of tuberculosis. It is important to know that the primary site of tuberculous deposits in adults, in the vast majority of cases, is in the posterior portion of the apex of the lung about an inch from its summit. Hence the closest scrutiny should be directed to the supra-scapular region, rather than to the clavicular regions, which are invaded secondarily as a rule. In making the examination by far the greatest value attaches to stethoscopic auscultation, straining the ears to detect fine moist rales at the end of inspiration, or variations from the normal characteristics of the breath sounds. I would call particular attention to the value of causing the patient to cough just prior to a moderately deep inspiration. I have frequently elicited a shower of fine crackling rales by this method when none could be heard otherwise. And the detection of such rales persisting after two or three full respirations is diagnostic of a tubercular deposit in the vast majority of cases.

In a large majority of cases these fine rales will be over-

looked unless sought for with extreme diligence. By diligence I mean having the patient stripped to the skin, and in the case of women stiff starched underclothing removed, as I have found more than once that the distant rustling of these garments on deep respirations produced a sound almost exactly similar to rales. By diligence I also mean time-taking and painstaking systematic going over every square inch of surface with a stethoscope. Regardless of what may be said to the contrary, I believe it to be impossible for any living man to hear as perfectly, locate as accurately, and make as few mistakes with his unassisted ear as with a stethoscope. One must remember, however, that the stethoscope, like other instruments of precision, requires constant practice in order that proficiency in its use may be gained. Furthermore, one gets accustomed to his own instrument, which yields him a satisfaction superior to any other. One should borrow or lend a stethoscope with about the same compunction he would a toothbrush. It has been from the infrequent use of an unsuitable or borrowed instrument that all slanders of stethoscopes have arisen that I have heard.

A further point in technic which I believe to be of real value is the frequent auscultation of this primary area following the hypodermic administration of Koch's old tuberculin for diagnostic purposes. Even in the absence of marked febrile reaction a local hyperæmia with resulting slight exudate often takes place at the focus of infection, and resulting fine moist rales occur. If there is a slight rise of temperature or reaction at the site of injection, the proof is all the more convincing.

I should like to emphasize, also, the fact that the appearance of tubercle bacilli in the sputum is now regarded as a late sign of an early stage at best, and that their absence, even if continued, is of no value whatever in ruling out the disease.

Finally, I would urge the necessity of continual study and practice as a requisite for attaining accuracy in diagnosis. Normal chests should be constantly studied and results kept

clearly in mind, in order that the slightest variations may be detected when the presence of disease is suspected.

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POINTS IN THE PROPHYLAXIS OF ARTERIOSCLEROSIS.

BY LOUIS M. WARFIELD, A. B., M. D., SAVANNAH.

Since the era of bacteriology and the discovery of the actual causative agents in many of the infectious diseases, modern medicine has taken an advanced stand which has for its prime object the prevention of disease. Our knowledge of the etiological factors concerned in many infections, and careful study of the epidemiology of these diseases, have enabled us to take great strides forward in the prophylaxis of many morbid conditions, the causes of which we are as yet ignorant.

Preventive medicine to-day needs no champion to defend her cause, she stands alone on a firm basis of fact and results which are incontrovertible.

It was but natural that attention should have at first been directed to the prevention of those diseases which from time to time sweep over a community, or a country, leaving death and disablement in their train. Having discovered what can be done in the prophylaxis of such scourges, the next step was to endeavor to prevent the development of insidious chronic diseases in any particular individual. It is the hope that this small effort may help towards the prevention of a very common malady and hence insure a comfortable prolongation of life to some persons, that it is presented this morning.

In a recent monograph by me on "Arteriosclerosis" occurs this paragraph in the Preface: "The stress and strain of our daily life has, as one of its consequences, early arterial degeneration. There can be no doubt that arterial disease in the comparatively young is more frequent than it was twenty-five years ago, and that the mortality from disease directly dependent on arteriosclerotic changes is increasing. Fortunately, the almost universal habit of getting out-of-

doors whenever possible, and the revival of interest in athletics for persons of all ages, have to some extent counteracted the tendency to early decay. Nevertheless, the actual prolongation of life is more probably due to the very great reduction in infant mortality and in deaths from infectious and communicable diseases.

"The wear and tear on the human organism, in our modern way of living, is excessive. Hard work, worry, and high living all predispose to degenerative changes in the arteries and so bring on premature old age."

The prophylaxis of arteriosclerosis does not differ so much from that of the infectious diseases in the respect that education is the basis of both. We have educated the public to screen doors and windows and to kill mosquitoes during yellow fever and malarial epidemics. We have educated many to beware of indiscriminate spitting. We are rapidly educating them in regard to the dangers from the common housefly. We can educate them collectively and individually in regard to the prophylaxis of arteriosclerosis. The difficulty lies in the fact that arteriosclerosis is an individual disease, that is, it is not transmissible and has no definite, discoverable cause as has typhoid fever, for example. It is insidious; it may be compatible with an active life for years; it does not, except at the last, cause much discomfort. Men insure their lives against death for the benefit of their posterity, yet men will not insure their health by regulation of their modes of living, and thus transmit to their posterity good tissues, a heritage which may not be purchased for gold.

We, unfortunately, are not responsible for our tissues when we are born. What Osler calls the "vital rubber" is transmitted to us as an inheritance. Upon the integrity of this tubing depend the functions of all the organs and tissues of the body. Naturally, we may nurse a poor grade of arterial tissue so that it will carry us a long way, or we may ruin a good grade by our own acts. The latter is our responsibility. One set of vessels may be markedly diseased and the rest of the arterial tree reveal few or no changes. There may be marked local sclerosis of the cerebral vessels; of the abdom-

inal vessels; of the peripheral vessels; of the arch of the aorta and coronary arteries of the heart. Could we but pick our ancestors there would be fewer middle-aged and even youthful arteriosclerotics. Moreover, no two persons in the same environment, under the same conditions, will react alike. One may show early arterial changes, the other may never show them. We have known persons over eighty years old whose arteries were as soft as a child's. The individual resistance is a factor from which we can not escape, and on which particular stress must be laid.

Very instructive is the perusal of mortality statistics, and the comparison of death rates from different diseases. Conditions vary considerably in communities, urban and rural, hence it is to be expected that there would be differences in the death rate of any two or more diseases, depending upon changed conditions of environment. It is particularly interesting that in New York City during a given period there were 25,000 deaths from arteriosclerosis to 17,000 from tuberculosis. Surely there is much food for thought in this and much opportunity to stay the ravages of this chronic disease. The wear and tear of life in such a large, rushing community is the only explanation of these startling figures. The average prolongation of life, which we are told has increased of late years, must be largely due to the saving of infant and youthful lives.

There are certain etiological factors which must be borne in mind in any attempt to prevent the development of arteriosclerosis. It has already been said that heredity plays a most important role, in fact it would scarcely be exaggerating to say that it is the chief etiological factor. It is the one factor over which we ourselves have no control. Leaving out as minor factors age and race (marked arteriosclerosis has been found in babies), we may group these factors under four headings:

(1) Chronic intoxication, as from alcohol, tobacco, syphilis, lead.

(2) Improper diet and overeating due most probably to

the absorption of blood-pressure raising products of deficient proteid metabolism from the intestines.

(3) Excessive muscular work.

(4) Stress and strain of modern life, in other words constant mental anxiety.

It will be noted that all of these factors (syphilis excluded) are concerned primarily with the raising of arterial tension. A notable exception to this is the arteriosclerosis of neurasthenia, which is accompanied as a rule by hypotension. The explanation of this may lie in the character of the tissue of the neurasthenic.

Experimentally, two kinds of arteriosclerosis have been produced. That produced by the injection the circulation of blood-pressure raising drugs, as adrenalin, digitalin, nicotin, extracts from the pituitary body, etc.; that produced by the toxins of streptococci and typhoid bacilli. In human beings we know that such drugs as those mentioned above increase the blood pressure, and Thayer has shown that typhoid fever produces arteriosclerosis of the peripheral arteries at least. We must not, however, lose sight of the occurrence of actual pipe-stem arteries in old people who have small, flabby hearts and low blood pressure. These individuals do not, as a rule, suffer from the various organic effects produced by the type of arteriosclerosis characterized by hypertrophied heart and high blood pressure.

It must also be borne in mind that arteriosclerosis is not, as a rule, the cause of the increased blood pressure, but the result of it. There are some who maintain that the increased arterial tension is produced only by chronic disease of the kidneys. There does seem to be good ground for the belief that early diagnosis of chronic nephritis may be made, before any demonstrable urinary changes occur, by the detection of increased tension in the brachial artery. Provided an individual has good tissue, the most important point to be remembered in the prophylaxis of arteriosclerosis is to regulate the blood pressure and keep it within normal bounds.

"Within normal bounds" is, after all, a relative term, for many factors enter into the estimation of the blood pressure.

The size of the arm band of the instrument, the thickness and firmness of the arm, the instrument used, etc., change the figures materially. On the whole, it may be safely said that any blood pressure in a man which is constantly, while at rest, over 150 mm. Hg., or in a woman over 140 mm. Hg., may be regarded as increased tension.

The prophylaxis of arteriosclerosis might well be entitled "The Plea for a More Rational Mode of Life." Moderation in all things is the keynote to health, and to grow old gracefully is an art which admits of cultivation. Alcohol, tobacco, syphilis are responsible for a large group of cases. Lead is responsible for a very small number of arteriosclerotics. Alcohol and tobacco are drugs which raise blood pressure and thus lead to arterial changes. Neither one is to be condemned because some abuse the use of either or both. It seems to be a well established fact that alcohol used daily even in comparatively small doses causes definite harmful tissue changes. It is scarcely conceivable that actual harm can be done to the average individual by an occasional drink. That excess is deleterious to health, no one will deny. The combination of concentrated brain work and constant whisky drinking shortens the lives of many men. This is most often seen in men of forty-five to fifty-five, heads of large business concerns who habitually take from six to ten or more drinks of whisky daily, and with possibly a bottle of wine for dinner. Such men look ruddy and in prime health, but almost invariably, careful examination will reveal unmistakable signs of arterial disease. The point is that these men do not realize their condition. They are the men who should be carefully examined twice a year by a doctor who will actually strip the patient and spend time over him. The dentists urge their patients to come every few months in order to have the teeth examined and people have learned that this is the best way to preserve the teeth, for the very first evidences of decay are nipped in the bud and a tooth is saved. When there is such care of the preservation of the teeth, it indicates that with education the same care would be exercised in regard to the whole body.

These men spoken of above are those to whom warnings should be given. They will usually scoff at the idea of their being in any immediate or remote danger; they may ask the physician to feel their muscles, strike their firm chests and to do other tests which they think should show how healthy they are. All this may be true, but the physician, finding the early high tension, the slightly accentuated second sound at the aortic cartilage, and the trace of albumin in the urine, does not do his whole duty unless he then and there utters the warning. The lurking danger of this group of symptoms, without the presence of albumin, has so impressed the medical directors of many life insurance companies, that a blood pressure reading must be made on all applicants over forty years of age. Increased tension alone constitutes an impairment in the risk.

It is not generally recognized that to overeating must be laid much of the arterial disease of the man who never drank, smoked, or chewed in his life. It should be borne in mind that there is a special form of arteriosclerosis confined to the splanchnic vessels. This abdominal type of arteriosclerosis is exceedingly important and is much more common than we think for. The absorption of products of putrefaction, as Metchnikoff believes, must play a large part in the production of the arterial changes which shorten life. "If it is true," he says, "that our precocious and unhappy old age is due to poisoning of the tissues (the greater part of the poison coming from the large intestine inhabited by numberless microbes), it is clear that agents which arrest intestinal putrefacton must, at the same time, postpone and ameliorate old age." Since the publications of Metchnikoff and his associates on the lactic acid bacilli, there has been a vast consumption of buttermilk all over the world. The theory that the lactic acid bacilli replace the ordinary intestinal bacterial flora and thus inhibit putrefaction in the large intestine, is attractive, and the fact is proved that in the stools of one taking large quantities of buttermilk, the lactic acid bacilli replace to great extent the putrefactive and colon bacilli. As

a means of prolonging life it certainly is worth trying. Only time can tell whether it actually will do so.

It is not the occasional overeating which is injurious. It is not the occasional drink or the moderate use of tobacco. It is the excess which is to be avoided. Excess, after all, is a relative term. The individual must be studied. For what to one constitutes moderation, to another is excess. So with exercise there must be enough but not too much. Exercise which in a youth is not violent, in middle life is excessive. The physician should study the habits and inclinations of his patients so that as far as possible his advice will be congenial to the patient.

It is certain that regularity of the bowels is one of the most important means of preventing undue intestinal putrefaction and the consequent absorption of poisonous products into the circulation. Metchnikoff contrasts a woman of 125 years who for fifty years had several movements daily, and who had no demonstrable arteriosclerosis, with a man, a colleague, who had only one movement a week and in whom sclerosis of the arteries occurred in so marked a form that he died before he had reached the age of fifty years.

It is well known that absolute rest and free purgation are the best means which we have to reduce high tension. The knowledge of this fact should be of great assistance to us in the prevention of arterial disease.

A symptom of intestinal putrefaction is indicanuria. Strangely enough, this may occur to a marked degree in those who have diarrhœa, and does not occur in all those who suffer from constipation. This I have repeatedly observed. Nevertheless, it is of some value in the prophylaxis of arteriosclerosis, and should always be tested for.

Moderation in all the habits of life, eating, drinking, smoking, exercise, etc., means the prolongation of active life and the attainment of a comfortable old age. All factors which are prone to produce high tension should be studiously avoided, and physicians should train themselves to recognize at the earliest possible moment, the signs of developing arterial disease. That this is difficult, no one will gain-

say. The early diagnosis of all chronic diseases is the theme for many valuable additions to our knowledge of the beginning signs and symptoms of many conditions which take off the flower of our manhood and womanhood. The ability to pick the essentials in the anamnesis, and to note the first deviations from normal in the physical signs, are not learned in a day. Nor can they be learned from the study of text-books on physical diagnosis. The principles well learned in the medical schools, a sure foundation of clinical pathology, careful history records, and correlation of clinical with post-mortem findings, give one a basis upon which experience can build a well-balanced superstructure. Provided that we have the foundation so that we argue from facts, not from theories, experience gathered from the study of patients themselves is our best instructor.

The plea here is to sound the warning and to give the necessary advice before the first faint signs of damage occur. Let us above all things be honest with our patients. We do not do our whole duty if we do not exercise our knowledge in the prevention as well as in the cure of disease.

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CYSTIC KIDNEY.

BY G. POPE HUGULEY, M. B., AND J. EDGAR PAULLIN, M. D.

In reviewing the literature of this subject, one is struck with the lack of uniformity of classifying cystic changes of the kidneys. Pathologically, we recognize three types: first, the dermoid; second, echinococcus; and lastly, the simple cysts, single or multiple.

In what follows, reference will be made only to the simple cystic kidney, or, as called by American authors, cystic degeneration of the kidney, but more properly by the English authors, as poly-cystic.

Poly-cystic kidney differs from hydronephrosis in that in hydronephrosis the entire kidney is enlarged, the enlargement being most evident in the pelvis, or in advanced cases, the entire parenchyma is destroyed by pressure; it also differs from those cases in which the entire kidney is destroyed as a result of cystic changes.

This condition is usually very difficult of detection, and Morris, in his work on Surgical Diseases of the Kidneys and Ureters, says that not one-third of the cases could be detected, if looked for during life. The rarity of this condition is realized, when, quoting the same author, he says that in the Middlesex Hospital in 2610 autopsies, only eight cases of this character were found.

It is believed that this condition is generally bilateral; Dickinson reports one in 21 as unilateral; Lejars 1 in 62; Ritchie 1 in 82; and Morris 4 in 7. Brewer, *American Journal of Medical Sciences,* found in 140 operations on the kidneys, only 3 of this character; one of which he regarded as probably an ecchinoccus cyst; one was discovered to be double and believed to be inoperable, and the third being caused probably by the infection with the tubercle bacilli.

Etiology.—The disease is usually one of middle life, males being more frequently affected than females. Various theo

ries as to the pathogenesis have been brought forth, and more or less elaborated. The ones to be mentioned appear to me to be the most rational. Ritchie, in a paper before the Edinburgh Royal College of Physicians, maintained that it was due to the presence of cells remaining from embryonic life. Dr. Paulin, in his report on examination of specimens, mentions Schreiner and Huber as holding that it is due to defective development in the beginning of the embryo; Shattock, of Scotland, insists that it is due to remains of the Wolffian bodies. By various other observers, it is held to be due to the following causes: First, a neoplasm; second, a malformation and failure of union of the excretory canals with the convoluted tubules; third, weakness of the walls of the tubules, preventing them from sustaining the pressure within; fourth, a peritubular sclerosis, with a contraction of the tubules and subsequent dilatation of malpighian capsules; fifth, an interstitial nephritis; sixth, impaction of calculi, acting as an obstruction; seventh, malaria; eighth, traumatism; ninth, multiple pregnancies; tenth, part of a general process with tendency of cysts to develop in other organs, notably the liver and spleen.

I beg to add here the report of Dr. Paulin on examination of specimens of cases of Dr. Nicolson's. I shall later report two cases of Dr. Nicolson's, in which I assisted in the operations, with one of my own, and I wish here to make acknowledgment of his kindness in allowing me to report them.

Pathology.—Dr. Paulin reports as follows:

"The specimen consists of a kidney measuring 23x9x10 cm., the surface of which is very irregular. There are numbers of cysts varying in size from 2 to 50 mm. in diameter scattered over its entire surface. Many of these have exceedingly thin walls, and there can be seen beneath the surface a fluid that varies from a clear, whitish, thin material to a thick, darkly stained gelatinous substance. I have been able to count 417 cysts on the external surface. In many of the cysts that have ruptured, the cavity is lined by a thin glistening membrane which is perfectly smooth. However, one

can see numbers of other cysts projecting into this cyst cavity, and are apparently separated from it only by a thin transparent membrane. On section, the inner surface of the kidney is composed of numbers of cavities, from which the above described fluid escapes. The size of these cysts varies. Occasionally, one is able to make out a small area from 2 to 4 cm. in length by 1 cm. in thickness, which apparently contains true renal substance. On sectioning this, however, one finds embedded in this tissue numbers of small cysts varying in size from 2 to 3 mm. in diameter. Numbers of these cysts contain a thick, dark brown, semi-transparent, gelatinous substance. The cavity of some of the cysts seems to have a distinctly trabeculated appearance. The pelvis of the kidney is about normal in size, perhaps a trifle larger than normal. The ureter measures 2 mm. in diameter, and is unobstructed. No stones are anywhere discovered in the kidney substance, neither is there any evidence of pus formation.

"Microscopically, a section from the inner surface of the kidney shows that in between the tubules there is quite a marked increase of the interstitial tissue. In some places, the kidney substance has practically disappeared and its place is taken by large collections of connective tissue containing quite a number of small round cells. The convoluted tubules for the most part, are slightly dilated. The cells are smaller than usual, and possess a more irregular outline than one normally observes. The lumen of most of these tubules contains a finely granular material and in many places, desquamated epithelial cells. There is a distinct puckering in places of these epithelial cells. The malpighian bodies show different pictures. Some of them are surrounded by dense layers of connective tissue with an atrophy of the glomeruli. Others are considerably dilated and contain a finely granular material. Sometimes the epithelial cells forming Bowman's capsules are arranged in two or three layers; they possess, however, the flat character which ordinarily characterizes these cells. There are numbers of smaller cysts scattered about within the organ that are lined by single layers of cuboidal epithelial cells. There are other

cysts which are lined by taller, more irregular cells, having a distinctly granular protoplasm. These I take to be cysts of the convoluted tubules. The blood vessels within the kidney substance are greatly thickened and for the most part are surrounded by dense layers of connective tissue; the increase in their thickness seems to be in the external coat. The thing that impresses one very forcibly in looking over this specimen is the marked increase in the interstitial tissue with atrophy of numbers of the glomeruli and the extensive cyst formation, the cysts being formed from convoluted tubules, collecting tubules and perhaps from Bowman's capsules.

"Concerning the origin of cysts of the kidney, the greater number that we observe belong to one of the following classes:

"Number 1. Simple or single cysts, occurring usually on the surface of the organ and varying in size from 0.5 to 6 cm. in diameter.

"Number 2. Multiple small cysts of the kidney occurring, as a rule, on the surface of the organ and most frequently observed in the kidney of chronic diffuse nephritis. These, as a rule, are very small and covered by a very thin membrance of connective tissue. The inner wall is lined by a single layer of flat epithelial cells. These cysts are supposed to be obstructive cysts, in that, they are caused by a closing off of the tubules by a contraction of the connective tissue within the substance of this organ.

"Number 3. Multiple cysts of the kidney occurring throughout the entire organ, varying in size from 5 to 100 mm. in diameter, almost completely destroying the normal structure of the organ, although it maintains to a certain extent, its characteristic shape, and is greatly increased in size."

Symptomatology. Unfortunately, symptoms are vague and indefinite. Among the commoner ones are pain in the lumbar and hypochondriac regions. Disturbances of digestion, brought about probably by pressure, and increased frequency of urination are generally found. They may closely resemble those caused by the presence of renal calculi, or chronic interstitial nephritis; or, as in the case to be reported by me, present the classical symptoms of nephritic abscess and sepsis.

They usually manifest evidence of disturbed bodily nutrition, and often present the waxy appearance charactertistic of advanced cases of nephritis. The amount of urine excreted is not noticeably altered: in one case of Dr. Nicolson's, and in my own in which I made urinalyses red blood cells, and pus cells, were found in abundance, with granular and hyaline casts. The symptoms as observed, will be reported in detail on reciting these cases.

CASE I. E. S. F.; age 58; married; American; commercial traveler.

F. H. Unimportant so far as any bearing on the question under consideration is concerned.

P. H. Did not have the ordinary diseases of childhood. Typhoid fever at the age of twelve, and about this age, moved to Alabama, and for ten or twelve years thereafter, had repeated attacks of "chills and fever." Had pneumonia twice, involving the left lung both times, the last attack in 1892.

P. I. Began four or five years ago, with pain in the left lumbar region. This continued, more or less constantly, occasionally having intermissions, during which time he was free from pain for several weeks at a time. About two years ago, had a sudden attack of violent pain lasting three or four days. On October 5, 1908, illness began, with violent pain in the right side, ushered in with a violent chill and rapid rise of temperature afterward. An osteopath saw him the next morning and made a diagnosis of pneumonia, and treated him for one week. On October 12th, at 9 p. m., I saw him for the first time, and found him with a temperature of 103, pulse 112 to 120, respiration 24, but regular and alike on both sides. Tongue dry. Patient had been having chills, followed by sweats, for the past three or four days, and had grown much weaker. Complete anorexia. Complained of a very disagreeable taste being constantly present, and breath very offensive. He was more or less stuporous: responses to questions being slow, and apparently had difficulty in recalling clearly the events of the past week. P. E. Showed the lungs to be quite normal. Heart sounds somewhat enfeebled. In right hypochondriac region, a mass

was distinctly noticeable, especially during inspiration. Palpation revealed a tumor which moved each respiratory act. With the apparent septic temperature and the presence of the mass, I made a diagnosis of nephritic abscess, caused probably by a calculus. The following morning, he was removed to St. Joseph's Infirmary. His condition during that day remained practically unchanged, temperature being about the same, but pulse became irregular and of poor quality. Operation was advised and accepted. It was set for the following morning, but on seeing him, it was deemed best to await developments, as it appeared that he probably would not withstand the shock, such as might be incident to the operation. At night of the same day, his condition showed no improvement, the matter was laid candidly before him and the family. He elected to take chances on an operation. Assisted by Dr. K. L. Reed, and with Dr. W. A. Selman giving the anaesthetic, the operation was done October 17th, nine a. m. Morphine-hyoscine—gas-ether anaesthesia. Patient took anaesthetic well, requiring a very small amount of ether. The last fifteen minutes of the operation being done without any ether being given. The right kidney was exposed by the usual lumbar incision; immediately on getting into the fatty capsule, a large greenish blue mass was seen; this ran well down into the abdomen, and prevented delivery of the kidney through the wound. This was punctured and drained and the kidney delivered. It was then seen that the entire surface of the organ was covered with numerous cysts, varying in size from that of a cocoanut to imperceptible ones. Remembering the probability of the other kidney being in the same condition, it was deemed best not to do a nephrectomy. Each cyst was punctured and the cyst sac enucleated. Some of these dipped quite deeply into the kidney substance, and free hemorrhage resulted from their enucleation; this was easily controlled by pressure, and the site of each cyst was swobbed with tincture of iodine. Several wicks of iodoform gauze were introduced and the kidney was dropped back into place. The wound was closed by the usual method.

The patient reacted well, and within a few hours, the tem-

perature had dropped, to normal and no time afterwards did it rise, and he made a prompt and rapid recovery. Since operation he has gained about 35 pounds in weight, and for the past several months, has been pursuing his usual work. Three weeks ago, when seen last, he complained of pain in the left lumbar region; examination failed to show any enlargement of the left kidney, but I am of the opinion that it must be involved, though the man appears to be in very good health.

The features of note, to me at least, were the typically characteristic symptoms of kidney abscess, not one being wanting. Exhaustive examination of the literature at my command since that time fails to reveal a similar case, though the late Dr. W. B. Armstrong told me that just a few days before, he had operated on a person who presented the same train of symptoms, and in whom he found the same condition. He had made a diagnosis of nephritic abscess, and was astonished to find multiple cystic kidney. So far as I know, it is not generally recognized that cystic changes produce septic symptoms. I can not give any explanation for those present in this case, but the fact remains that they immediately disappeared after the operation described, and the patient recovered to the extent mentioned.

CASE II. Patient of Dr. W. P Nicolson's. J. B. Age 42; married; merchant; Russian. F. H., unimportant. P. H. No serious illness; had the ordinary diseases of childhood. Right inguinal hernia. P. I. Began two years before; pain in the back and the right side, more or less constantly. Increased frequency of urination. Constant and annoying disturbance of digestive function. Had been confined to bed only a few days previous to the operation. Operation August 14, 1908. Kidney was exposed through the usual lumbar incision, which had to be greatly lengthened, owing to the great size of the kidney. It was finally delivered, and a nephrectomy done. Patient excreted only three or four ounces of urine after operation, and died 48 hours later of uroema. The report of Dr. Paullin fully describes the findings on examination of this kidney.

Case III. J. C. Age 30; single, merchant; Russian. F. H. Unimportant. P. H. Typhoid fever 22 years ago. History of no other illness.

P. I. Began two years ago, with "heartburn" and bad taste in the mouth; constant headaches, and said he felt depressed all the time. No backache. Had two attacks of abdominal pain, the last attack eight weeks ago, which was very severe. Operated on about February 1, 1909. Incision was made at the outer border of the right rectus muscle. It was immediately seen that the kidney was responsible for the mass which had been found in the right hypochondriac region. Nephrectomy was done, through this incision. Patient has made a satisfactory recovery.

Treatment.—From what has been said, it is obvious that the treatment must be entirely surgical, and it is equally obvious that the operative treatment is from the very nature of the condition and the liability of the other kidney, to be similarly affected, a very uncertain procedure, and of doubtful results, although Jacobson & Rowlands, Dr. A. D. Bevan (Annals of Surgery, 1906) and Dr. Parker Sims (Annals of Surgery 1906) report cases in which a nephrectomy had been done and that the patients recovered.

As in my case, when any portion of the kidney appeared to be functionally active, it would appear to be wise to do a less radical operation than nephrectomy. Discretion would certainly demand before doing a nephrectomy that the other kidney should be exposed and examined in order to determine its condition.

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THE VALUE AND LIMITATIONS OF BLOOD EXAMINATIONS IN THE DIAGNOSIS OF DISEASES ASSOCIATED WITH ENLARGEMENT OF THE SPLEEN; WITH REPORT OF A CASE OF ANAEMIA SPLENICA.

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Routine blood examinations, though performed to some extent in the larger clinics of this country, are not as yet used by the general practitioner to the extent that their value, in differential diagnosis, indicates. This is due mainly to two causes; first, the difficulty of the technique, which requires elaborate and expensive apparatus, special training, constant practice, and a considerable amount of time; second, a lack of knowledge and just appreciation of the true significance and value of the blood picture. Blood examinations are of value only when carefully and systematically considered in connection with all the data obtained in the taking of the history, from the physical examination, and from the application of other special methods of examination. The not uncommon attitude of the practitioner, who demands of the clinical pathologist an opinion based on the blood examination alone, is a false one, since diagnoses based upon the results of such examinations, considered apart from the data with which they should be correlated, are often misleading. Furthermore, there is often too much dependence placed upon the finding, in single or even repeated examinations, of a typical blood picture. As a part of his training, the student of hematology has become familiar with a number of types of blood conditions, or blood pictures. In the application of this knowledge in medicine, he early learns that many of his findings do not agree with these types, and is at a loss to interpret these atypical blood pictures. In the solution of these difficulties, the text-books are too often of no

help. To secure a diagnosis, it is necessary to study the blood findings of a series of cases of similar nature, and to consider these findings in connection with the data of the anamnesis and physical examination.

In this communication, it is proposed to consider briefly the significance of atypical blood pictures occurring in certain diseases in adults, associated with enlargement of the spleen; and to report a case of Anaemia Splenica, in which were observed atypical blood pictures, and in which, at section, was found a spleen of very large size, presenting some unusual pathological features.

Osler (1), in his papers on Splenic Anaemia, cites the following diseases in which an enlarged spleen may be found:

1. Splenic anaemia.
2. Pernicious anaemia.
3. Leukaemia.
4. Hodgkin's disease.
5. Cirrhosis of the liver.
   - A. Alcoholic cirrhosis.
   - B. Syphilitic cirrhosis.
   - C. Hypertrophic cirrhosis.
6. Haematochromatosis.
7. Chronic malaria.
8. New growth.

Before considering in detail the blood pictures observed in the conditions enumerated above, it will be of service to review, with especial reference to the degree and character of the splenic enlargement, some of the clinical features of these conditions.

1. Splenic Anaemia. Osler (2) divides the typical cases in two classes, A. Acute; B. Chronic. Simonds (3) distinguishes two groups: Group I. Cases characterized by enlargement of the spleen, usually moderate, with anaemia of a chlorotic type, accompanied by gastric hemorrhages, and by frequent and often early ascites, often following enlargement of the liver (cirrhosis). Jaundice is rare, but leucodermic patches may occur on the skin. The average age of the patients, at onset, is 15 years. Anatomically,

there is a diffuse increase in the connective tissue elements of the spleen, often accompanied by a similar change in the liver. Congestion of the portal system, with the production of oesophageal varices, may occur. The largest spleen of this type which has been observed weighed 4,500 grams; the average weight of the spleen is 1,320 grams. Group II. Cases characterized by the frequent observation of a family history of similar disease, and by the presence, with anaemia, of enlarged spleen, often of immense size; enlargement of the liver is less common. Hemorrhages, either subcutaneous, or from the nose and gums, are frequent. Jaundice is observed, but not frequently. Anatomically, the spleen shows a marked hyperplasia of the endothelial elements. This change is also occasionally observed in the liver and in the lymph glands. The average age at onset is later than in Group I. The average weight of the spleen, in cases of this group, is 2,300 grams, the largest, 12½ pounds. Cases occur which can not be classified in either of the groups.

2. PERNICIOUS ANAEMIA. The splenic enlargement may be extreme, but is usually of moderate degree. Cases without a definite history of alternating periods of improvement and recurrence, and with atypical blood pictures, may be difficult to differentiate, if complicated with great enlargement of the spleen.

3. LEUKAEMIA. Instances of leukaemia, both myelocytic and lymphocytic, with temporary or persistent aleukaemic states of the blood are recorded, and require to be differentiated. The splenic enlargement is often very great. Leukaemia is the most common cause of splenic enlargement in the district from which the case to be reported came.

4. HODGKIN'S DISEASE, WITH ENLARGED SPLEEN. The enlargement of the spleen is usually slight, and not sufficient to give rise, of itself, to special symptoms. The glandular enlargement is important.

5. CIRRHOSIS OF THE LIVER.—A. Alcoholic cirrhosis. The splenic enlargement is usually moderate. In cases of long standing, the spleen may be of very large size. The anaemia is usually, however, of a distinctly secondary type.

In cases of long standing which require differentiation, the typical facies, and the course of the disease, considered from the standpoint of the history, make the diagnosis easy. Cary (4) has recorded a case, considered clinically to be possibly one of splenic anaemia, but proving on section to be an instance of cirrhosis of the liver, with enlarged spleen, the spleen weighting 760 grams.

B. Syphilitic cirrhosis, with enlarged spleen.—Enlargement of the spleen, occasionally extreme, may occur, either with congenital syphilis, in children, or with acquired gummatous hepatitis, in adults. The irregularity of the liver, with the more moderate enlargement of the spleen, and the history of the infection, with improvement under specific treatment, differentiate the cases. The cases with enormous enlargement of the spleen usually show undoubted evidence of luetic infection, and as a rule, have received no efficient treatment.

C. Hypertrophic Cirrhosis.—The hypertrophic cirrhosis of Hanot is a rare form of cirrhosis which may require differentiation. As in the other forms of cirrhosis, the spleen is usually not of very great size.

6. Haematochromatosis. In this form of disease, also rarely observed, with splenic enlargement and with cirrhosis of the liver and its attendant chain of symptoms, the terminal stages may resemble the condition under discussion. Hemorrhages are less common, and the blood changes less marked. The very marked changes in the skin, and the glycosuria of the terminal stages, suffice to differentiate the cases.

7. Chronic Malaria. In regions where malarial infection is common, and especially in the Southern part of the United States, enlargement of the spleen is very often observed. The history of malarial infection, and the finding, during some period of the disease, of the malarial parasites, or of pigment, enables a diagnosis.

8. New Growth. Primary neoplasm of the spleen is uncommon. Bunting (5) has reported an instance of a primary sarcoma of the spleen, and reviewed the cases on record. The splenic enlargement may be great, as in the case of

Casott (6), who observed, in a woman of fifty-four years age, a round-celled sarcoma of the spleen weighing 5,000 grams, with metastases throughout the abdomen. In the case of splenic anaemia to be reported in this communication, the observation, during life, of multiple tumor masses in the abdomen, made the diagnosis of new growth a possible one. The more cellular types of these spleens as in Group II, of Simonds (3) resemble the true tumors in their pathology, but are usually of distinctly different types clinically. The cases reported by Gaucher (7), Picou and Ramond (8), Collier (9) and by Bovaird (10), belong to this class. Bunting (5) states: "We would emphasize the occurrence, though rarely, of malignant tumors of the spleen, independent of the lymphosarcoma group, Hodgkin's disease, or of the ordinary forms of splenic anaemia, but bearing a marked histological resemblance to a rather rare group of splenic anemia, from which, however, they are clinically quite distinct."

Secondary growths of the spleen are more common, but are usually of well-defined clinical character, and are usually accompanied with anaemia of a distinctly secondary type.

In the differential diagnosis of splenic anaemia, the rarer forms of disease cited above are usually easily differentiated. The atypical blood pictures of the leukaemias and of pernicious anaemia require special attention. The anaemias of the cirrhoses of the liver, and of Hodgkin's disease are usually of the secondary type. In malignant disease, the anaemia is occasionally severe, and approaches closely in type that of the essential anaemias. As a rule, the cellular changes, both quantitative and qualitative, are less marked, but exceptions are on record. The writer has the record of a case with marked enlargement of both liver and spleen, without enlargement of the glands, in which, at section was found a scirrhus carcinoma of the pylorus, with metastases. The blood picture was that of a severe anaemia, as follows: erythrocytes, 1,200,000; leucocytes 10,000; haemoglobin 30 per cent.; color index, 1.39; a differential count of 500 leucocytes showed the presence of 3.5 per cent. of myleocytes, and of 222 nucleated red blood cells, of which 22 were megalo-

blasts, and 25 intermediate forms. The blood picture, with the exception of the leucocysis, is a typical one of pernicious anaemia. The consideration of the blood picture alone would be misleading. This record should be compared with the following blood picture, occurring in a case with enlarged liver and spleen, but without evidences of malignancy, at autopsy. The anemia was marked, but without accompanying leucocytosis. The differential count showed 32.9 per cent. of polymorphonuclear leucocytes, 17.6 per cent. of large mononuclear leucocytes, 19.2 per cent. of small mononuclear leucocytes, 1.8 per cent. of transitional mononuclear leucocytes, and 1.4 per cent. of myleocytes, 1.6 per cent. of the cells not being differentated. While counting 500 leucocytes, 128 nucleated red blood cells were observed, of which a large proportion were megaloblasts. The liver weighed 2,800 grams, and the spleen, which measured 20 by 8 cm., weighed nearly 1,400 grams. A diagnosis of pernicious anaemia was made, despite the enlargement of the spleen. The blood picture of undoubted cases of pernicious anaemia may be atypical. Musser and Howard (11) in discussing grave anaemia, state "If megaloblasts are not present, the case is certainly not one of pernicious anaemia." The statement is too broad, and, as we shall see, must be modified in considering the atypical forms of pernicious anaemia, the blood pictures of which may not show megaloblasts, and in which even normoblasts may be lacking. Lavenson (12), in writing of Aplastic Anaemia, an atypical form of pernicious anaemia, in which nucleated red blood cells are usually not found, writes, "It is essentially pernicious in cause, duration, and termination, and serves well to illustrate the futility of attempting the diagnosis of most blood diseases on the blood picture alone."

Before considering in detail the atypical blood pictures in the remaining condition associated with enlarged spleen, it is desired to present the record of a somewhat remarkable case. The history is presented quite fully, since complete records of such cases are not numerous in the literature.

Case Report. The patient, O. E., male, white, aet. 54 years, was admitted to the Milwaukee County Hospital on the

second day of February, 1907, complaining of great weakness and of swelling of the legs. The patient was a teamster by occupation, and a native of Germany, but had lived in this country for a number of years, never having lived in a district where malaria was prevalent. The following notes are copied from the history:

"Family History. Negative. No family history of malignant growth is obtained. Patient does not know of a case of disease similar to his own, in the family. No family history of tuberculosis or insanity.

PERSONAL HISTORY. The patient has been a hard worker at manual labor, has used liquor, both beer and brandy the latter regularly before breakfast. He also uses tobacco in moderation. The patient gives no history of acute infectious disease. The patient denies venereal infection aboslutely, has never had a sore on the penis, and gives no history of secondaries. He is married, and has had seven children, all healthy. His wife has had no miscarriages. Fifteen years ago he was ruptured while pitching hay, but gives no history of acute trouble referable to the hernia. In September, 1906, he sustained a fracture of the ankle (Pott's), but was able to work in January, 1907, the fracture healing rather slowly.

PRESENT ILLNESS. The patient gives a history of illness of indefinite onset and duration, covering a period of about two years, in which gradually increasing weakness, and repeated loss of blood from the nose, without definite cause, are the most prominent features. He has been able to work most of the time. Recently he had been unable to work, on account of weakness. The patient had noted that his abdomen was large, and had felt a hard mass on the left side. He has not lost much weight. He first noted the swelling of the legs seven days before entrance following swelling of the abdomen. He has recently been troubled with cough and shortness of breath, worse at night. He has had no pain anywhere. He passes water freely, 3 to 4 times daily, and 2 to 3 times during the night, a small amount at a time, but without pain or difficulty. His appetite is fair, but poorer than usual. His bowels have moved freely, but he had not

had diarrhoea. He has not been jaundiced. There have been repeated hemorrhages from the nose, but no blood has been vomited or passed by the bowels, nor has blood been coughed up.

Physical Examination. The patient is a large man, fairly well nourished. The eyes react to light and accommodation, somewhat sluggishly. A slight arcus senilis is present. The conjunctivae are pale, very slightly yellowish. The patient sees well, but not so well as before his present illness. Ears negative, no discharge, no tophi. Tongue covered with a furry whitish covering, the mucous membranes of the mouth pale, the teeth many of them absent, the others decayed. The skin is hot and dry, a little dusky in color, there are a few dilated arterioles on the face.

The patient has difficulty in respiration the breathing being labored. The chest is well formed, moves as a whole, the abdominal movements are more marked. Vocal fremitus about equal on the two sides. On percussion, the sounds are normal over both fronts. On inspiration, the breath sounds are markedly rough. On expiration, which is considerably prolonged, high-pitched, sibilant rales are heard. The percussion note is resonant over the backs. Moist sibilant and sonorous rales are heard over the entire back, otherwise negative.

Heart.—The apex beat is not visible nor palpable directly. The most marked impulse is found in the fifth interspace, 14 cm. form the mid line. The area of relative cardiac dullness is increased considerably, extending from the right sternal border to a point 15 cm. to the left of the midsternal line, and from the third interspace downward. The heart sounds are distant, but otherwise normal. No thrill is palpable.

Abdomen.—The abdomen is rather prominent, symmetrically enlarged, except for a little bulging on the left side. Palpation reveals the presence, in the abdominal cavity, of a large firm tumor mass, extending from under the costal margin at a point about 10 cm. to the left of the tip of the ensiform process down to the median line and slightly be-

yond it 13 cm. below the ensiform. The right border of the mass extends down the median line gradually to the left, reaching a point 5 cm. to the left of the median line, just above Poupart's ligament. The lower border is parallel to Poupart's ligament until lost posteriorly. The tumor is very firm, but is neither painful nor sensitive. The median border is distinctly notched, several notches being felt. The percussion note over the main mass is distinctly tympanitic on light percussion, flat with heavy blows of the hammer. The note is dull in the flank. The tumor is distinct from the abdominal wall, and moves separately. It is not continuous with the ribs, the fingers passing easily between the mass and the costal margin. The tumor moves slightly with quiet respiration, more freely on deep respiration. Over the large mass described can be felt a second smaller movable mass, apparently separate, which can be grasped or rolled under the hand. The area of liver dullness is increased, extending 11 cm. in the mammary line. The liver is palpable, extending 4 cm. below the costal margin. The liver is not painful, nor tender on pressure. In the right inguinal region, the patient has a scar of an old operative wound, and a hernial protrusion about the size of a small egg. The intestine, which apparently fills the sack, can be easily pushed back from the sack. No glandular enlargements can be found, except a small, firm palpable gland on the left side of the neck, along the posterior border of the sterno-cleido-mastiod muscle. The reflexes are for the most part present but not very active. The knee kicks could not be secured. The skin and subcutaneous tissues of both legs pit on pressure, the edema extending to the level of the knees."

Dr. Wuerdemann examined the eye-grounds and made the following note: "Retinitis with exudate, typical leukaemic fundus, change restricted to retina, optic nerve not involved; astigmatic refractive error; the left eye-ground shows more change than the right."

The urine was examined on the 4th of February. In 24 hours, 900 cc. of clear amber colored urine were passed, with a very slight sediment. The specific gravity of the

specimen was 1.015, the reaction acid. Albumin was present in considerable amount. The acetic acid and heat test showed a dense turbidity of the test specimen. The nitric acid ring test showed a ring 7 mm. wide on standing 5 minutes. Sugar was not found, the urine not reducing Fehling's solution. On microscopic examintaion, a few leucocytes were found, also a few cylindroids, epithelial cells and uric acid crystals. Long search failed to show the presence of tube casts. A second specimen was examined on the 5th of February. In 24 hours, 1,300 cc. of deep amber colored urine were passed, turbid on standing. The specific gravity of the specimen was 1.014, the reaction acid. Albumin was present in traces only, the acetic acid and heat test showing only a faint turbidity. The albumin was too small in amount to estimate by Esbach's method. Sugar was absent. The urea was estimated and found to the total amount of 20.8 grams in the day's urine (1.6 per cent.). Microscopically uric acid crystals were found but no casts. Repeated examinations of the urine for casts were made with negative results.

The blood was examined and found to be very watery in character, and showing much variation in the size of the red blood cells, with many irregular forms. The leucocytes were not increased. A differential count was then made with the following result:

	Per cent.
Polymorphonuclear neutrophilic leucocytes (P. M. N.)	51
Large mononuclear leucocytes (L. M.)	12.0
Transitional mononuclear leucocytes (Tr.)	4.0
Small mononuclear leucocytes (S. M.)	29.0
Myelocytes (My.)	4.0
Eosinophiles, polymorphonuclear (P. M. Eo.)	0.0
Eosinophilic myelocytes (My. Eo.)	0.0
	100.0

In a short search, a number of nucleated red blood cells, including megaloblasts, were found.

On the 5th of February, at 3 p. m., blood specimens were

secured and a complete blood examination made, with the following results:

Erythrocytes, 1,706,000 per cmm.

Leucocytes, 2670 per cmm.

Hæmoglobin, 35 per cent.

Color index, 1.0 plus.

The fresh blood was pale and watery in character, coagulating slowly. Microscopically a considerable variation in the size and shape of the red blood cells was noted, numerous poikilocytes, microcytes, and macrocytes being observed. The leucocytes were relatively decreased in number. Myelocytes could not be found in the fresh blood. Smears were stained with Ehrlich's triple stain, and a full differential count of 500 cells made:

	Per cent.
P. M. N.	64.0
L. M.	6.8
Tr.	1.4
S. M.	25.6
My.	1.6
P. M. Eo.	0.6
My. Eo.	0.0
	100.0

While counting 500 leucocytes, there were observed in all 37 nucleated red blood cells, as follows:

Normoblasts, 26 cells; megaloblasts, 3 cells; intermediate forms, 8 cells.

In the stained specimens, red blood cells showing marked polychromatophilic endoglobular degeneration were numerous. The blood was examined a number of times with similar results.

The essential points of the blood examination were: (1) grave anæmia, the red blood cells being more numerous than usual in pernicious anæmia at the first examination; (2) marked leukopenia; (3) a color index higher than that usually observed in secondary anæmia; (4) a moderate myelocytosis, the absence of eosinophilic myelocytes being signifi-

cant; (5) marked poikilocytosis, with marked variation in the size of the cells; (6) the presence of nucleated red blood cells, including megaloblasts, and of cells showing degenerative changes. From the standpoint of the blood examination alone, the diagnosis of pernicious anæmia would be suggested. The absence of a history of periods of improvement, and the finding of an enormously enlarged spleen, did not agree with this diagnosis.

The sputum was examined on the 2nd of February, but tubercle bacilli were not found.

Surgical interference was not considered advisable on account of the weakened condition of the patient. The weakness increased. The patient had no pain, but suffered with cough, and difficulty in breathing. The physical condition showed no marked change, except for slight enlargement of the abdomen, with signs of fluid. From the 15th, there was an irregular fever, the highest temperature observed being 102.4 degrees F. Hemorrhages were not observed during the hospital residence. The bowel movements were free, but the passages otherwise normal. Death occurred on the 21st of February.

A clinical diagnosis of splenic anæmia was made, and the diagnosis confirmed at autopsy.

The post-mortem examination was made 12 hours after death. The results of the examination are shown in the anatomic diagnosis, as follows:

Anatomic Diagnosis.

Chronic splenic tumor, primitive splenomegaly (fibrosis and endothelial hyperplasia); multiple deposits of iron pigment (hæmosiderin) about the splenic vessels; anæmic infarcts of spleen; grave anæmia (anæmia splenica); hypertrophy of liver; multiple hæmangiomata of liver; chronic proliferative, cystic peritonitis; anasarca, effusion into all the serous cavities, subcutaneous edema; hypertrophy and dilatation of the heart; relative insufficiency of all heart valves.

Cholelithiasis (stones in the gall bladder and common duct, not occluding); chronic ulcerative colitis; stricture of colon (chronic obstruction from adhesions of the ileum about the point of stricture); ulcers of ileum at points of adhesions; old perforation of base of ulcer into a mass of adhesions about the stricture; atrophy of cortex of left kidney; nephrolithiasis (right kidney); uric acid infarction of the collecting tubules of both kidneys; recurrent right inguinal hernia; scar of old operative wound (herniotomy).

PROTOCOL OF AUTOPSY.

The body was that of a well-built, rather poorly nourished white man, 173 cm. long. Rigor mortis complete. Pupils regular, equal, measuring about 5 mm. in diameter. Mocus membranes and conjunctivæ pale, the latter a trifle yellowish. Slight puffiness of the face. Chest well formed. Abdomen prominent, fluctuates with fluid, a large firm tumor mass can be felt on the left side. Pigmented scar in right inguinal region over small hernial protrusion. Skin a little dusky, otherwise clear. Genitalia present no scars or other abnormality. Anus clear, no hæmorrhoids. The skin and subcutaneous tissues of both legs and arms pit on pressure.

On section, the subcutaneous fat is fairly abundant, pale in color. The subcutaneous tissues are suffused with watery fluid. The abdominal cavity contains several liters of clear, straw-colored fluid. The peritoneal surfaces are thickened, opaque, and contain large, prominent blood vessels, but are smooth, moist and shining, except for the adhesions to be described. The liver is very large, reaches 7 cm. below the tip of the ensiform cartilage in the midline, 10 cm. below the costal margin in the mammary line. The organ is firm, the left lobe free. The right lobe is adherent with long, fibrous adhesions over its upper surface. The capsule is smooth, except for adhesions. The spleen is of very large size, forming a large mass in the left hypochondrium and extending nearly to Poupart's ligament. There are a number of thick, strong, opaque stringy adhesions between the upper surface of the

spleen and the diaphragm. On the left lateral wall of the peritoneal cavity are a number of cysts, to be described, The omentum is thickened, rolled up, and forms a firm mass 20 by 10 by 5 cm. over the lower and anterior part of the spleen, to which it is loosely adherent with fibrous adhesions. Where the mass is adherent to the spleen, the splenic capsule is thickened, opaque, whitish. Springing from the mass of stringy fibrous adhesions binding the spleen to the left lateral abdominal wall is a large, thin-walled cyst, 16 by 5 by 3 cm., filled with clear, straw-colored fluid. Also three or four similar smalled pedunculated cysts, the largest 4 or 5 cm. in diameter. The spleen is firm, and presents several notches on the median border, the most prominent 10 cm. above the umbilicus. The appendix is small and free, apparently normal, lying at the lower end of the cæcum. The gall bladder is adherent with fibrous adhesions to the omentum, to the colon, and to the duodenum. The stomach is small, there are a few fibrous adhesions between the stomach and the lower surface of the liver. The right inguinal ring is patent, admitting two fingers. The sac is empty, and apparently does not extend beyond the external ring. The left inguinal ring is closed. The diaphragm reaches the upper border of the 5th rib on the left side, the lower border of the 5th rib on the right side.

The left pleural cavity contains about 50 cc. of clear serous fluid, the right 350 cc. The pleural surfaces are nearly free from adhesions, are smooth, moist, and shining. The pericardial cavity contains 120 cc. of very slightly turbid serous fluid, in which are seen two or three small whitish floccules. The surfaces are, however, smooth, moist, and shining. There are a few ecchymotic areas over the base.

The heart is large and flabby, weighing 575 grams. On the anterior surface of the right ventricle is a slightly raised white plaque of thickening of the pericardium, which is elsewhere clear. The right auricle is distended with chicken-fat clots, and with an abudant thin, bloody fluid, brownish red in color. The ring of the tricuspid valve admits four fingers, and measures 14 cm. in circumference. The flaps of the

valve are fairly wide and but slightly thickened. The pulmonary valves are large, wide and thin, the ring measuring 9 cm. in circumference. The cavity of the right ventricle is larger than normal and distended with blood. The walls of the cavity measure 3 to 4 mm. in thickness. The left auricle is likewise distended. The foramen ovale is closed. The ring of the mitral valve admits three fingers snugly, and measures 14 cm. in circumference. The flaps of the valve are shorter and thicker than normal, but smooth. The cavity of the left ventricle is somewhat enlarged, the walls measure 1.3 cm. in thickness. The aortic valve holes water, the ring measures 9 cm. in circumference. The right posterior valve is stiffened with a small calcified area at its left border. The left posterior and anterior flaps are short and thickened, but smooth. The arch of the aorta is not thickened, and is elastic. On the intima are a few obscure slightly raised white areas. The left coronary vessel is somewhat tortuous, but has thin walls. The cavity of the vessel is clear. The right coronary vessel has a double ostium, but otherwise resembles the left. The endocardium is everywhere clear, a little opaque. The myocardium is a little flabby, brownish red, a little paler over the inner half, homogeneous on tangential section.

The left lung is everywhere air-containing, posteriorly, on section, rather full of bloody, watery fluid. A few slight adhesions are found over the upper and middle lobes of the right lung, which is voluminous, and otherwise resembles the left lung. Apices clear. Pleura smooth, except for adhesions, mottled with pigmented areas. At the bifurcation of the trachea, the glands are enlarged and contain some opaque greyish areas.

The spleen is very large, weighing 3550 grams, and measuring 32 cm. long, by 20 cm. wide, by 9 cm. in thickness. The usual form of the spleen is retained. On the upper surface are adhesions, as described. The capsule is thickened. Under the adhesions are thickened white areas. On the median border are five well-defined notches, separated by rounded masses. The organ is firm almost to the point of hardness. The general color of the surface is light brownish

red. The notches are redder, and covered with ecchymotic areas. A few ecchymoses appear under the capsule elsewhere. The lower pole is distinctly lighter in color and firmer. The vessels entering the hilum are large and tortuous, but show no special change. On section the capsule is everywhere thickened, being 2 to 3 mm. in thickness under the adhesions. The pulp is less firm, rather spongy, of a dark red, velvety appearance, full of blood, but does not scrape off readily. The trabeculæ are small and not prominent. The malpighian corpuscles can not be distinguished. At the lower pole, the section exposes an irregular triangular, firm, opaque, yellowish area, measuring 5 by 2½ cm. This area is slightly raised above the level of the section and bordered with a narrow zone of red. (White infarct.) From the center of the pulp project three rounded dark red masses, the largest 2 cm. in diameter. The pulp about these is compressed. These tumor masses resemble closely in appearance the remainder of the pulp, but are deeper red, somwhat gelatinous, and softer. In the fixed specimens, these masses become less prominent. On the cut surface are also a large number (over forty were exposed in one section) of small linear brown areas, resembling deposits of hæmosiderin. The largest of these deposits is about 3 mm. long by 1½ mm. wide, but most of them are smaller. They appear to be deposits about the smaller vessels. The infarcted area at the lower pole measures on the surface 12 by 10 cm. One of the rounded masses between the notches on the median border is also the seat of a white infarct. Smears of the pulp were examined, and a large number of cells, some of them resembling myelocytes, others with multiple nuclei were observed.

The two lower coils of the ileum are adherent to the lower end of the sigmoid flexure, one loop being applied to the left side of the colon, the other entering a mass of adhesions about the colon, which is likewise adherent to the peritoneum over the urinary bladder. The urinary bladder was opened and the mucosa appeared normal. On stripping the adherent mass from the bladder, a mass of adhesions, with a pigmented necrotic center, is exposed. On opening the upper adherent

loop of the ileum, a large, deep, irregular ulcer, 3 cm. long and 2 cm. wide, is found at the point of adhesion. In the lower loop, at the point of adhesion, is found a smaller, depressed ulcer, almost entirely healed, but with a perforation in its base, extending into the mass of adhesions. The colon passes through the mass of adhesions in a tortuous, narrow course, with a definite stricture at a point opposite the ulcers in the ileum. The finger is passed with difficulty. The walls of the colon are much thickened. There are small ulcers of the mucosa both above and below the stricture. The intestine is elsewhere normal.

The liver is very large, weighing 3860 grams. The right lobe measures 32 cm. antero-posteriorly, 25 cm. laterally, and 10 cm. in thickness. The left lobe measures 25 by 9 by 4 cm. The surface is smooth, except for adhesions. On the lateral posterior surface of the right lobe is a small deep-red mass, slightly raised, on section measuring 8 by 4 mm. This is spongy and made up of small spaces filled with blood and separated by narrow trabeculæ. There is a similar nodule on the upper surface of the left lobe. The liver is brownish-red, rather pale, somewhat mottled with paler yellowish areas, and with diffuse areas of a deeper red. The organ is firm, but not to the degree of hardness, the edge is rather blunt. On section, the tissue resists the knife, but is of a homogeneous light red color. The lobulations are small, and rather indistinct. There is no evidence, in the gross specimen, of an increase in the connective tissue elements. The gall bladder is large; calculi can be felt in it. On pressure, bile flows readily from the tubercle of Vater. The upper part of the intestine contains bile-stained fluid. The walls of the gall bladder are not much thickened. There are two large stones, the largest 2½ by 1 by ½ cm., and three smaller ones. In the common duct are two small stones, the largest 4 mm. in diameter, not impacted. The cystic duct is clear.

Both adrenals are normal in appearance. The combined weight of the kidneys is 355 grams; they are unequal in size, the right weighing 230 grams, the left 125 grams. Along

the outer edge of the left kidney are deeply depressed roughened areas. At the lower pole is a cyst, 5 cm. in diameter. The capsule strips easily, leaving a smooth surface, except over the depressed areas, where the surface is granular. On section, the cortex is narrow, irregular, varying from 3 to 7 mm., rather opaque. The glomeruli show as shining dots. The striæ are irregular in the papillary zone, where there are a number of small white linear deposits. A few small cysts are exposed in section. Organ rather flabby. The right kidney is large, almost smooth, rather soft and flabby. On section, the cortex is wide, measuring 10 mm., surface smooth, rather opaque, striæ but slightly irregular. There are granular deposits along the line of the collecting tubules, as in the left kidney. In the calyx of the lower pole is a reddish-brown stony mass about 1 cm. in diameter. The pelves and ureters are otherwise clear. The urinary bladder contains a small amount of turbid urine. The prostate is small, and shows no abnormality. The testicles and epididymides are normal on section.

The pancreas is large, firm, on section of normal appearance. The stomach shows nothing of importance. The upper loops of the intestine are distended with gas and fluid, the dependent loops showing congestion. Section of the ulcers in the ileum and colon shows no sign of infiltration with new growth. The thoracic and abdominal aorta does not show much change, a few plaques of sclerosis being present.

The lymph glands are not enlarged, and on section show no abnormality. The bone marrow of the sternum and ribs is red in color, the bone soft and easily broken. The bone marrow in the shaft of the femur is likewise of a reddish tint, but distinctly fatty in mottled areas. Smears from the bone marrow show a few cells with rounded nuclei and neutrophilic granules. Frozen sections of the bone marrow show a fatty marrow, stained with blood. Hypertrophied hæmolymph glands could not be found. Examination of the central nervous system is not permitted.

Specimens of the tissues were hardened in Zenker's fluid, in alcohol, and in formaline. Blocks of the fixed and hardened tissues were imbedded in celloidin and also in paraffine. Thin sections were cut and stained with appropriate stains. The anatomic diagnosis was confirmed by the examination of the stained specimens. No marked cellular infiltration with myleocytic cells or with lymphocytes was found in the sections of the spleen, liver, lymph glands, or kidney. Sections of the lung, lymph glands, kidney, wall of the ileum, stomach, colon, pancreas, heart, and testicle showed nothing of importance. In sections of the liver, the cells were large, but showed no marked degeneration; there was no decided increase in connective tissue. The small reddish tumor masses in the liver were identified in section as cavernous angiomata. In the periphery of these tumor growths, a few small areas infiltrated with lymphocytes were found. In section, the marrow of the long bones was fatty and much congested, and without definite hyperplastic changes. The red color of the bone marrow observed at the autopsy was considered to be due to the congestion, and to staining with soluble blood pigment.

The spleen showed in section some remarkable pathological changes. The following notes were made on the stained sections: "The capsule is much thickened, the connective tissue somewhat hyaline. The trabeculæ are small and show little change. There is a moderate diffuse increase of the connective tissue elements of the reticulum, most of it rather old, but in places with cells of an embryonal type. The endothelium lining the blood spaces is for the most part unchanged, but occasionally swollen cells form a part of the lining of the spaces. Scattered through the section are multinuclear cells, similar to those seen in bone marrow. The malpighian bodies are small; many of them are otherwise unchanged. The majority show fibrous change. Over large areas, there is marked congestion. The areas with most marked fibrous change contain less blood. Sections of the tumor-like areas show similar changes, but in addition

marked hyperplastic cellular changes. There are a great many large cells on variable morphology. The changes are not the typical endothelial hyperplasia figured by Bovaird (10). In places, a number of large swollen cells form a portion of the lining of a blood space. Similar cells are seen free in the spaces. Many giant cells, with large lobulated nuclei, or with multiple nuclei, occur. Many of these cells are loaded with blood pigment, which occur at points throughout the sections. The areas occupied by these tumor-like areas are not congested. The changes observed in these areas differ from those of the body of the spleen in a quantitative way only. The tumor-like areas are rather sharply marked off from the surrounding tissue, which is somewhat compressed. The linear deposits of blood pigment are seen to be about the smaller arteries, which are nowhere occluded, though occasionally somewhat flattened. Their walls are thickened, and contain, in the media, deposits of calcium, which retain the hæmatoxylin stain. The connective tissue about the vessels is increased, and hyaline. In the fibrils, and in spaces between them, are deposits of granular yellowish pigment, which takes the iron stain. Some of the connective tissue fibrillæ of the perivascular sheath also contain deposits of calcium salts. In the periphery of the areas of deposit, and often extending into the spaces filled with blood pigment, are dense deposits of closely packed red blood cells, apparently not in the blood spaces. The deposits of blood pigment extend along the vessels for several millimeters and were studied in serial sections of the tissue. In no section was an occluded vessel exposed. The intralobular and interlobular veins of similar size seem to be free from similar deposits. The large vessels at the hilum of the spleen show little change. The artery walls are but little thickened, and show only a few small deposits of calcium salts.

The histopathological changes observed in the spleen are considered to be those observed in splenic anæmia. Scattered deposits of iron pigment have been commonly observed. Deposits along the course of the vessels, of the type here de-

scribed, have rarely been observed. Simonds (3) has described a spleen with deposits of similar type, and has found reports of only three similar cases, those of Borissowa (13), Hamill (14), and Stengel (15). Ehrlich has noted that connective tissue fibers in the neighborhood of hemorrhages become impregnated with deposits of iron pigment and calcium salts and that these fibers undergo degenerative changes. Simonds (3) has attempted to explain the large deposits occurring about these vessels as resulting from the thrombi in veins in close relation to the proximal portion of the pigmented vessels, but states that in the sections nothing was found to account for their origin definitely. In the sections of the spleen described in the present communication, the vascular changes, so far as concerns the arteries and veins, were practically confined to the arteries. The deposits occurred in vessels which had no close relationship to well defined veins. The interlobular and intralobular veins showed no change, and the connective tissue about them was free from deposits. The following is offered as possible explanation of the deposits of iron-and calcium-containing pigments about the arteries. The blood stream through the normal spleen is slow. The blood flow is further retarded by the contraction of the spleen on irritation, either directly, or through its special nerves, as shown by Mall (16). When in a dilated condition, the venous outflow is especially free, since the veins are dilated in their course through the relaxed trabeculæ. In the enormously dilated spleen of splenic anæmia, the blood flow is very slow, but with a free flow from the veins, under normal conditions, in the absence of portal obstruction. In the condition of extreme hyperplastic change, the obstruction is therefore dependent upon internal pressure. Internal pressure will first affect the flow through the blood sinuses, then through the arteries, and lastly, the veins, which are in a distended condition, and protected by their course in the trabeculæ. As the pressure closes the venous sinuses, and the pulse wave becomes fainter and fainter in the terminal artery and ampulla, extravasations of blood occur

through the walls of the ampulla. The extravasated blood does not return to the vessels, but is destroyed, and the resulting pigment deposited in the connective tissue about the neighboring arteries, until relatively large deposits are formed. The changes in the artery wall itself may be considered to be secondary to the slowing of the blood stream. Mall (16) has shown that extravasations from the artery and its terminal ampulla occur first in the periphery of the lobule, then throughout the pulp, and especially along the course of the vessel, in the site of the deposits in question.

Diagnosis.

In the case reported, the diagnosis of splenic anæmia was made on the following points: anæmia of grave but not extreme grade, associated with enlarged spleen, without glandular enlargement, and without other well-defined cause of the anæmia: leukopenia, with no marked changes in the differential count, except a moderate myelocytosis; the long duration of the disease, without marked variation in its progressive character, and the occurrence of repeated hemorrhages; the absence of pains, especially in the long bones; the negative urinary findings; the negative history of lues; the late occurrence of ascites, followed by swelling of the legs. The alcoholic history was suggestive of the possibility of cirrhosis. The anatomic findings leave no doubt concerning the exactness of the diagnosis. The accessory pathological conditions discovered at autopsy are not considered to have exerted any marked influence on the blood picture.

Discussion of the Blood Picture.

The blood picture, in the case reported, is a remarkable one. The great reduction in the number of the red blood cells, the relatively high color index, the leukopenia, the relative increase in the small mononuclear leucocytes, and especially the changes in the morphology and staining reaction of

the red blood cells, makes a typical picture of a grave anæmia, closely resembling pernicious anæmia. The enormous enlargement of the spleen and the absence of a history of improvement and recurrence, differentiate the case. In the recorded cases of splenic anæmia, the hæmoglobin is usually relatively low. Marked endoglobular degeneration of the erythrocytes is rarely observed. Nucleated red blood cells are not commonly found. Poikilocytosis was observed in five of Osler's (2) cases.

ATYPICAL BLOOD PICTURES.

A study of the literature of the grave anæmias has shown that the case histories contain many records of blood conditions which are atypical, in that they do not agree with the blood pictures usually observed in the conditions discussed. Various descriptive terms have been applied to these atypical conditions, and in some instances attempts have been made to use these terms as the names of separate disease entities. In many cases, in which the diagnosis has been based largely or wholly upon the blood picture, and in which the blood findings have not been correlated with clinical and anatomic data, the diagnoses must remain in doubt. A brief review of these atypical blood pictures is here attempted.

ATYPICAL LEUKAEMIA.

The typical cases of leukæmia are readily differentiated by the great increase in the number of the leucocytes, and by the relative and actual increase in special cells, in myelocytic leukæmia, of large mononuclear cells with neutrophylic granules, in lymphocytic leukæmia, of the small mononuclear leucocytes. In the atypical forms of leukæmia, however, the leucocytes may show no increase, or may be below normal, a condition of hypo-leukæmia. Osler (1) cites a case of splenomyelogenous leukæmia with temporary leukopenia, due to the use of arsenic. Intercurrent infection may often re-

duce the number of the myelocytes actually or relatively, and obscure the picture. As Ewald (18) has shown, this is not always the result, with infection as a complication. The therapeutic use of the X-ray is often followed by a marked change in the blood, which may return to normal, accompanying a decided reduction in the size of the spleen and an improvement in the physical condition. Sooner or later, the old conditions recur. Pappenheim applies the term, "Aleukæmic status of leukæmia," to these changes. Ehrlich (17) emphasizes the importance in diagnosis of the presence of all the types of mononuclear cells, especially those with acidophylic granules. Even these cells may not be found in undoubted cases of leukæmia.

Ewald (18) has described a condition of anæmia, associated with enlarged spleen, but without glandular enlargement, to which he has applied the phrase, "Leukæmia without leukæmic blood." The clinical picture was typical of leukæmia, the blood picture atypical, as follows:

Red blood cells, 740,500 per cmm.

White blood cells, only 800 per cmm.

Hæmoglobin, 28 per cent.

Color index, 1.9.

The fresh blood showed no marked morphological changes. There were no nucleated red blood cells. A differential count showed: P. M. N., 71 per cent.; L. M., 2 per cent.; Tr., 3.0 per cent.; S. M., 21 per cent.; My., 3 per cent. Eosinophilic myelocytes and mast cells were not observed. At autopsy a hyperplastic spleen and a raspberry-jelly bone marrow was found. Hirschfeld (19) has reported cases of severe anæmia without signs of regenerative changes in the bone marrow, and other cases, under the name, "Atypical myleoid leukæmia," in which myleocytes were present in small numbers. Struempell (20), Zyphen (21), Helly (22), Moritz (23), and Pappenheim have also reported atypical cases. Myleocytes may also occur in splenic anæmia. Osler (1) records a case (No. XIII) in the differential count of which 1.5 per cent. of myelocytes occurred, also a large number of

nucleated red blood cells, including megaloblasts. This case and others in which myelocytosis has been a feature of the blood picture has been included by Hirschfeld and others in lists of atypical leukæmias.

Aplastic lymphocytic leukæmia is also observed. A. Wolff (24), in discussing remissions in leukæmia, uses the term aplastic lymphatic leukæmia to describe atypical leukæmia in which regenerative changes fail. Osler (1) describes a case in which a lymphoid leukæmia, with great increase in the small mononuclear leucocytes, was the terminal stage of an anœmia of the type of pernicious anæmia. Mixed-celled types, with their aplastic forms, also occur, and present confusing pictures.

LEUKANAEMIA.

Von Leube (25) has given the term "leukanæmia" to a form of anæmia regarded as a combination of leukæmia and pernicious anæmia, occurring in a boy of 10 years with enlarged spleen and liver. The observed duration of the disease was very short, and characterized by a grave anæmia, with hemorrhages from the nose. The blood examination was as follows: Red blood cells, 256,000; leucocytes, 10,500; hæmoglobin, 10 per cent. A differential count showed 15 per cent. of myelocytes, with nucleated red cells very numerous. Anatomically, a mottled red and fatty bone marrow was observed, with multiple abscesses of the spleen. Identical blood pictures have been observed in undoubted cases of leukæmia. Marked regenerative changes are found in severe cases of secondary anæmia. Elmer (26) reports a case in which the exact diagnosis must remain in doubt, since an autopsy was not secured. A woman of 25 years of age complained of gradually increasing weakness. Examination revealed an enlarged liver, and a very large spleen. The red blood cells numbered less than 1,000,000 per cmm., the leucocytes varied from 12,000 to 18,200 per cmm. The color index was high. The remarkable feature of the blood picture was the very large number of megaloblasts, which often outnumbered the

normoblasts. Myelocytes were present constantly, varying from 5 per cent. to 11 per cent. Eosinophilic myelocytes were observed occasionally. An otitis media developed while the patient was under observation, but this complication did not materially affect the blood picture. Weber's (27) case with myelocytic infiltration of the liver seems to be an atypical leukæmia. Kirchensteiner's case (28) was characterized by a low grade myelocytosis, with large numbers of normoblasts, but no megaloblasts. Mosse (29) reports a case which does not differ materially from many observed cases of leukæmia. There was an enlarged spleen. The leucocytes numbered 30,870 per cmm. Myelocytes were observed in considerable numbers, 8 per cent. Eosinophilic myelocytes were also observed. Elmer (26) has reviewed the cases on record, and rejects those of Luce (30), Bushnell and Hall (31), and of Morawitz as atypical. In the opinion of the writer of the present communication most of these cases can be classed under the atypical forms of leukæmia, splenic anæmia, or pernicious anæmia.

Atypical Pernicious Anaemia.

Struempell (32) states that there is a narrow border line between splenic anæmia and pernicious anæma. The blood pictures of pernicious anæmia may be classified as follows:

1. The typical blood picture of pernicious anæmia, with marked regenerative changes in the bone marrow.

2. The atypical blood picture of pernicious anæmia with low grade normoblastic regeneration.

3. The atypical blood picture of aplastic anæmia, or pernicious anæmia of rapid and progressive course, without periods of improvement, and without signs of regeneration in the blood. Lavenson (12) has reported a case and collected the records of a series of 10 cases. The blood picture is characterized by the following changes:

A. Great reduction of the red blood cells, as in pernicious anæmia.

B. Low color index; in pernicious anæmia the color index is usually high.
C. Leucopenia.
D. Relative increase of lymphocytes.
E. Absence of megaloblasts, a point of differentiation from pernicious anæmia.
F. Infrequent occurrence of normoblasts.

Anatomically, the condition resembles pernicious anæmia, except that the bone marrow in aplastic anæmia is of a yellow, fatty appearance, and microscopically shows no regenerative changes.

In low grade normoblastic pernicious anæmia, a mottled red and yellow bone marrow may be observed. The duration of the disease is longer, and occasional periods of improvement may occur. Normoblasts or even megaloblasts may be observed in small numbers in the circulating blood. The writer has the record of a case of anæmia of this type, in which nucleated red blood cells were observed only after long search, just before death. There was a grave anæmia, the red cells being less than 1,000,000 per cmm., a high color index, marked poikilocytosis. The anæmia was without observable cause. At autopsy the bone marrow showed a mottled appearance, the liver showed typical iron deposits, and the spinal cord lesions were those observed in pernicious anæmia. The diagnosis could not have been made on the blood picture alone.

CONCLUSION.

Splenic anæmia, a rare form of disease, presents a blood picture which is not typical, and which may closely resemble the atypical blood pictures of the leukæmias and of pernicious anæmia.

In the present state of our knowledge of anæmia, such terms as leokanæmia, aplastic anæmia, myelocytosis, mixed-cell leukæmia, hypoleukæmia, and myelocytosis should be regarded as clinical terms descriptive of atypical blood pictures, and not as the names of disease entities.

I desire to acknowledge my indebtedness to Miss Mary Gridly for her excellent drawing of the secton of the spleen, and to Dr. Henry Hanson, who has kindly furnished me data.

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PLATE I.

Showing enlarged spleen of a case of splenic anæmia, in the body cavity, at autopsy.

PLATE II.

Showing longitudinal section of spleen of splenic anæmia.

A. Tumor-like nodules of cellular hyperplasia.

B. White infarct.

C and D. Multiple deposits of iron pigment around arteries.

CONSTITUTION AND BY-LAWS

OF THE

Medical Association of Georgia.

CONSTITUTION.

Article I.—Name of the Association.

The name and title of this organization shall be the Medical Association of Georgia.

Article II.—Purposes of the Association.

The purposes of this Association shall be to federate and bring into one compact organization the entire medical profession of the State of Georgia; to extend medical knowledge and advance medical science; to elevate the standard of medical education, and to secure the enactment and enforcement of just medical laws; to promote friendly intercourse among physicians; to guard and foster the material interests of its members and to protect them against imposition; and to enlighten and direct public opinion in regard to the great problems of State medicine, so that the profession shall become more capable and honorable within itself, and more useful to the public, in the prevention and cure of disease, and in prolonging and adding comfort to life.

Article III.—Component Societies.

Component Societies shall consist of those county medical societies which hold charters from this Association.

Article IV.—Composition of the Association.

Section 1. This Association shall consist of members and delegates.

Sec. 2. *Members.* The members of this Association shall be the members of the component county medical societies, to which only white physicians should be eligible.

Sec. 3. *Delegates.* Delegates shall be those members who are elected in accordance with this constitution and by-laws to represent their respective component societies in the House of Delegates of this Association.

Article V.—House of Delegates.

The House of Delegates shall be the business body of the Association, and shall consist of (1) Delegates elected by the component county societies; (2) the Councilors, and (3) *ex officio*, the President and Secretary of this Association.

Article VI.—Council.

The Council shall consist of the Councilors, and the President and Secretary, *ex officio*. Besides its duties mentioned in the by-laws, it shall constitute the Finance Committee of the House of Delegates. Five Councilors shall constitute a quorum.

Article VII.—Sections and District Societies.

The House of Delegates may provide for a division of the scientific work of the Association into appropriate sections, and for the organization of such Councilor District Societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component societies.

Article VIII.—Sessions and Meetings.

The annual meetings shall take place on the third Wednesday in April, and at such place as shall be designated by the Association.

Article IX.—Officers.

Section 1. The officers of this Association shall be a President, two Vice-Presidents, a Secretary-Treasurer and eleven councilors, one from each congressional district.

Sec. 2. The officers, except the Secretary-Treasurer and councilors, shall be elected annually. The terms of the councilors shall be for three years, those first elected serving one, two and three years, as may be arranged, viz.: the councilors for the first, second, third and fourth districts for three years; those for the fifth, sixth, seventh and eighth for two years; those for the ninth, tenth and eleventh for one year. The Secretary-Treasurer shall be elected for a term of five years. All these officers shall serve until their successors are elected and installed.

Sec. 3. The officers of this Association shall be elected by the Association by ballot, and without nomination, at 3 o'clock on the last day of the annual session, and no person shall be be elected to any such office who is not in attendance on that annual session, and who has not been a member of the Association for the past two years. If there is no election on the first ballot, the three names receiving the highest number of ballots shall be voted on, the other names being dropped. If there is no election on second ballot, the two names receiving the highest number of ballots shall be voted on until election occurs. Delegates to the American Medical Association shall be elected at same time and in same manner.

Article X.—Funds and Expenses.

Funds shall be raised by an equal per capita assessment on each component society. The amount of the assessment shall not exceed the sum of $3.00 per capita per annum. Funds may be appropriated by the House of Delegates to defray the expenses of the Association, for publications, and for such other purposes as will promote the welfare of the profession. All resolutions appropriating funds must be referred to the finance committee before action is taken thereon.

Article XI.—Ratification.

The House of Delegates shall submit all questions before it to the Association for ratification.

Article XII.—The Seal.

The Association shall have a common seal, with power to break, change or renew the same at pleasure.

Article XIII.—Amendments.

Any amendment that may be offered to the constitution shall lie over until the next annual meeting; and for its adoption at such meeting shall require a two-thirds vote of all present and voting.

BY-LAWS.

Chapter I.—Membership.

Section 1. The name of a physician on the properly certified roster of members of a component society, which has paid its annual assessment, shall be *prima facie* evidence of membership in this Association.

Sec. 2. Any person who is under sentence of suspension or expulsion from a component society, or whose name has been dropped from its roll of members, shall not be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take part in any of its proceedings until he has been relieved of such disability.

Sec. 3. Each member in attendance at the annual session shall enter his name on the registration book, indicating the component society of which he is a member. When his right to membership has been verified by reference to the roster of his society, he shall receive a badge which shall be evidence of his right to all the privileges of membership at that session. No member shall take part in any of the proceedings of an annual session until he has complied with the provisions of this section.

Chapter II.—General Meetings.

Section 1. All registered members may attend and participate in the proceedings and discussions of the general meetings. The general meetings shall be presided over by the President, or by one of the Vice-Presidents.

Chapter III.—House of Delegates.

Section 1. The House of Delegates shall meet at 9 a. m. on the first day of the annual session. It may adjourn from time to time as may be necessary to complete its business;

provided, that its hours shall conflict as little as possible with the general meetings. The order of business shall be arranged as a separate section of the program.

SEC. 2. Each component county society shall be entitled to send to the House of Delegates each year one delegate for every fifty members, and one for each fraction thereof, but each component society which has made its annual report and paid its assessment as provided in this constitution and by-laws shall be entitled to one delegate. Should the regular delegate from any county not be present at the meeting, the President shall appoint a substitute from that county to act.

SEC. 3. Twenty delegates shall constitute a quorum.

SEC. 4. It shall, through its officers, council and otherwise, give diligent attention to and foster the scientific work and spirit of the Association, and shall constantly study and strive to make each annual session a steppingstone to future ones of higher interest.

SEC. 5. It shall consider and advise as to the material interests of the profession, and of the public in those important matters wherein it is dependent on the profession, and shall use its influence to secure and enforce all proper medical and public health legislation, and to diffuse popular information in relation thereto.

SEC. 6. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse among physicians of the same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influence.

SEC. 7. It shall encourage post-graduate and research work, as well as home study, and shall endeavor to have the

results utilized and intelligently discussed in the county societies.

Sec. 8. It shall divide the State into councilor districts, one for each congressional district, and, when the best interest of the Association and profession will be promoted thereby, organize in each a district medical society, and all members of component county societies and no others shall be members in such district societies.

Sec. 9. It shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates. Such committees shall report to the House of Delegates and may be present and participate in the debate thereon.

Chapter IV.—Duties of Officers.

Section 1. The President shall preside at all meetings of the Association and of the House of Delegates; shall appoint all committees not otherwise provided for, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit, by appointment, the various sections of the State and assist the Councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. The Vice-President shall assist the President in the discharge of his duties. In the even of the President's death, resignation, or removal, the Vice-Presidents, in their order, shall succeed him.

Sec. 3. The Secretary-Treasurer shall give bond in the sum of $1,000. He shall demand and receive all funds due the Association, together with the bequests and donations. He shall pay money out of the treasury only on a written order of the President.

Sec. 4. The Secretary-Treasurer shall attend he general meetings of the Association and the meetings of the House of Delegates, and shall keep minutes of their respective proceed-

ings in separate record books. He shall be *ex officio* Secretary of the Council. He shall be custodian of all record books and papers belonging to the Association. He shall provide for the registration of the members and delegates at the annual session. He shall, with the co-operation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society, and, on request, shall transmit a copy of this list to the American Medical Association. He shall aid the Councilors in the organization and improvement of the county societies and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence, notifying members of meetings, officers of their election and committees of their appointment and duties. He shall employ such assistants as may be ordered by the House of Delegates with the approval of the Association, and shall make an annual report to the Association. He shall supply each component society with the necessary blanks for making their annual reports; shall keep an account with the component societies, charging against each society its assessment and collect the same. Acting with the committee on scientific work, he shall prepare and issue all programs. The amount of his salary shall be fixed by the Association.

CHAPTER V.—COUNCIL.

SECTION 1. The Council shall meet on the day preceding the annual session and daily during the session, and at such other times as necessity may require, subject to the approval of the President. It shall meet on the last day of the annual session of the Association to organize and outline work for the ensuing year. It shall elect a chairman and clerk, who, in the absence of the Secretary of the Association, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House of Delegates.

SEC. 2. Each Councilor shall be organizer and peacemaker for his district. He shall visit each county in his district.

at least once a year for the purpose of organizing component societies where none exist, for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his work, and of the condition of the profession of each county in his district at the annual session of the House of Delegates. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the House of Delegates on a proper itemized statement, but this shall not be construed to include his expense in attending the annual session of the Association.

Sec. 3. The Council shall be the board of censors of the Association. It shall consider all questions involving the right and standing of members, whether in relation to other members, to the component societies, or to this Association. All questions of an ethical nature brought before the House of Delegates or the general meeting shall be referred to the council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or of a component society, on which an appeal is taken from the decision of an individual Councilor, and its decision in all such matters shall be final, when ratified by the Association.

Sec. 4. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies, to be suitably designated so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

Sec. 5. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Association. All money received by the Council and its agents, resulting from the discharge of the duties assigned them, must be paid to the Secretary-Treasurer of the Association. As the finance committee it shall annually audit the accounts of the Secretary-Treasurer and duties assigned them, must be paid to the Secretary-Treasurer

other agents of this Association and present a statement of the same in its annual report to the House of Delegates, which report shall also specify the character and cost of all the publications of the Association during the year, and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary. In the event of a vacancy in the office of the Secretary-Treasurer, the Council shall fill the vacancy until the next annual election.

SEC. 6. Any member of the Council who fails to attend two regular successive sessions of the Council or whose district does not show evidences of the performances of his duties during the year, unless he renders an acceptable excuse to the Council, his position shall be declared vacant by the President and his successor appointed by the President.

SEC. 7. In the absence of a Councilor the President is empowered to appoint a representative from the District as acting Councilor.

SEC. 8. Each Councilor shall render at every session a written report of each county in his district.

CHAPTER VI.—COMMITTEES.

SECTION 1. The standing committees shall be as follows:

A Committee on Scientific Work.

A Committee on Public Policy and Legislation.

A Committee on Arrangements, and such other committees as may be necessary.

SEC. 2. The Committee on Scientific Work shall consist of three members, of which the Secretary-Treasurer shall be one, and shall determine the character and scope of the scientific proceedings of the Association for each session. Thirty days previous to each annual session it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented.

SEC. 3. The Committee on Public Policy and Legislation shall consist of three members and the President and Secre-

tary. Under the direction of the House of Delegates it shall represent the Association in securing and enforcing legislation in the interest of public health and of scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, State and national affairs and elections.

Sec. 4. The Committee on Arrangements shall be appointed by the component society in which the annual session is to be held. It shall provide suitable accommodations for the meeting places of the Association and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary-Treasurer for publication in the program, and shall make additional announcements during the session as occasion may require.

Chapter VII.—County Societies.

Section 1. All county societies now in affiliation with this Association, or those which may hereafter be organized in this State, which have adopted principles of organization not in conflict with this constitution and by-laws, shall, on application, receive a charter from and become a component part of this Association.

Sec. 2. As rapidly as can be done after the adoption of this constitution and by-laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only on approval of the Council, and shall be signed by the President and Secretary of this Association. The Association shall have authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this constitution and by-laws.

SEC. 4. Only one component medical society shall be chartered in any county.

SEC. 5. Each county society shall judge of the qualification of its own members, but, as such societies are the only portals to this Association, every reputable and legally registered white physician who does not practice or claim to practice, nor lend his support to any exclusive system of medicine, shall be eligible to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

SEC. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the right to appeal to the Council, and its decision shall be final, when ratified by the Association.

SEC. 7. In hearing appeals the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a board and as individual Councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

SEC. 8. When a member in good standing in a component society moves to another county in this State, his name, on request, shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

SEC. 9. A physician living on or near a county line may hold his membership in that county most convenient for him to attend on permission of the component society in whose jurisdiction he resides.

SEC. 10. Each component society shall have general direction of the affairs of the profession in its county, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

Sec. 11. At some meeting in advance of the annual session of this Association, each county society shall elect a delegate or delegates to prepresent it in the House of Delegates of this Association, in the proportion of one delegate to each fifty members, or fraction thereof, and the Secretary of the society shall send a list of such delegates to the Secretary of this Association at least ten days before the annual session.

Sec. 12. The Secretary of each component society shall keep a roster of its members, and of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. In keeping such roster the Secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county, and in making his annual report he shall be certain to account for every physician who has lived in the county during the year.

Sec. 13. The Secretary of each component society shall forward its assessment, together with its roster of officers and members, list of delegates, and list of non-affiliated physicians of the county, to the Secretary of this Association each year thirty days before the annual session.

Sec. 14. Any county society which fails to pay its assessment, or make the report required, on or before April 1 of each year, shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the Association, or of the House of Delegates until such requirement has been met.

Chapter VIII.—Miscellaneous.

Section 1. No address or paper before the Association shall occupy more than 15 minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject, except by unanimous consent.

Sec. 2. All papers read before the Association, or any of

the sections, shall become its property. Each paper shall be deposited with the Secretary when read.

SEC. 3. The deliberations of this Association shall be governed by parliamentary usage as contained in Robert's Rules of Order, when not in conflict with this constitution and by-laws.

CHAPTER IX.

The present membership of the Association shall constitute the nucleus in their respective counties for the organization of county societies. They shall have a preliminary organization and invite all reputable white physicians in their county to join them in forming a permanent organization. At the meeting for permanent organization they shall elect officers and adopt a constitution and by-laws, the same not to conflict with that of the State Association. Those counties not now having membership in the State Association may call a meeting of the regular white physicians, organize a society and secure a charter from the Secretary of the State Association.

CHAPTER X.—AMENDMENTS.

These by-laws may be amended at any annual session by a majority vote of the Association, after the amendment has laid on the table for one day.

ROLL OF MEMBERS

OF THE

Medical Association of Georgia.

1909.

Abbreviations—P., President; V.-P., Vice-President; S., Secretary C. S., Corresponding Secretary; T., Treasurer; O., Orator; C., Censor.

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
I. E. Aaron	Lyons	Toombs	1904
T. F. Abercrombie	Dallas	Paulding	1909
R. E. Adair	Cartersville	Bartow	1897
F. L. Adams	Elberton, R. F. D. 6.	Elbert	1899
H. P. Adams	Savannah	Georgia	1906
I. H. Adams	Macon	Bibb	1906
E. G. Adams	Greensboro	Greene	1909
W. E. Adams	Greensboro	Greene	1909
W. E. Adams	Madison	Morgan	1903
W. H. Adams	Savannah	Georgia	1906
W. A. Aderhold	Clem	Carroll	1909
B. F. Aiken	Jenkinsburg	Butts	1906
G. L. Alexander	Forsyth	Monroe	1894
W. H. Alexander	Blakely	Tri-County	1906
B. W. Allen	Columbus	Muscogee	1906
H. D. Allen	Milledgeville	Baldwin	1891
Jos. E. Allen	Augusta	Richmond	1906
L. C. Allen	Hoschton	Jackson	1906
D. C. Alsobrook	Rock Spring	Walker	1908
J. S. Alsobrook	Ringgold	Walker	1907
J. E. Amason	Washington, R. F. D.	Wilkes	1906
L. Amster	Atlanta	Fulton	1894
Harry Ainsworth	Thomasville	Thomas	1902
C. L. Anderson	Barnesville	Pike	1908
J. M. Anderson	Barnesville	Pike	1900
N. Z. Anderson	Covington	Newton	1894
C. R. Andrews	Atlanta	Fulton	1905

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
T. H. Andrews	Cuthbert	Randolph	1906
W. S. Ansley	Decatur	DeKalb	1905
E. R. Anthony (V.-P.)	Griffin	Spalding	1887
J. T. Arnold	Parrott	Terrell	1906
T. L. Arnold	Kingston	Bartow	1902
J. C. Asbury	Greensboro	Greene	1909
W. T. Asher	Atlanta	Fulton	1901
P. H. Askew	Nashville	Berrien	1906
J. P. Atkinson	Milledgeville	Baldwin	1906
Geo. E. Atwood	Valona	Georgia	1908
A. L. R. Avant	Savannah	Bulloch	1895
Arch Avary	Atlanta	Fulton	1887
J. C. Avary	Atlanta	Fulton	1889
C. L. Ayers	Toccoa	Stephens	1905
Alfred A. Bagwell	Ingleside	DeKalb	1906
E. M. Bailey	Acworth	Cobb	1899
Jas. W. Bailey	Gainesville	Hall	1861
T. S. Bailey	Newnan	Coweta	1904
Jas. B. Baird (S. O. P.)	Atlanta	Fulton	1872
Jas. B. Baird, Jr.	Atlanta	Fulton	1908
W. H. Baker	Flintstone	Walker	1909
E. L. Baker	Manchester	Meriwether	1909
L. A. Baker	Ty Ty	Tift	1909
J. O. Baker	Savannah	Georgia	1906
E. G. Ballenger	Atlanta	Fulton	1908
J. P. Ballenger,	Armuchee, R. F. D.	Floyd	1906
W. R. Bannett	Sugar Valley	Gordon	1909
W. G. Bannister	Resaca	Gordon	1909
F. G. Barfield	Cuthbert	Randolph	1904
A. A. Barge	Newnan	Coweta	1903
H. M. Barker	Flintstone	Walker	1909
C. R. Barksdale	Blakely	Tri-County	1907
J. M. Barnett	Pretoria	Dougherty	1903
S. T. Barnett	Atlanta	Fulton	1905
W. R. Barnett	Resaca	Gordon	1908
V. H. Bassett	Savannah	Georgia	1909
C. L. Baskin	Temple	Carroll	1902
R. B. Barron (V.-P. G.)	Macon	Bibb	1884
Craig Barrow	Savannah	Georgia	1903
Jno. J. Bartow	Dublin	Laurens	1904
J. M. Bates	Canton	Cherokee	1904
W. W. Battey, Sr.	Augusta	Richmond	1906
W. W. Battey, Jr.	Augusta	Richmond	1907

NAME	POST OFFICE	COUNTY SOCIETY	ADMITTED
R. I. Battle	Cartersville, R. F. D...	Bartow	1907
G. W. Battle	Cassville	Bartow	1906
G. V. Baxley	Grovetown	Richmond	1906
J. R. Beall	Blythe	Richmond	1906
J. L. Bell	Swainsboro	Emanuel	1909
J. C. Beauchamp	Williamson	Pike	1906
W. L. Beauchamp	Williamson R. F. D. 1.	Pike	1909
F. S. Belcher	Mansfield	Jasper	1903
A. K. Bell	Madison	Morgan	1889
L. J. Belt	Millen	Jenkins	1888
S. C. Benedict (o. c. p.)	Athens	Clarke	1883
J. C Bennett	Jefferson	Jackson	1905
W. L. Bennett	Cumming, R. F. D. 1..	Forsyth	1907
C. F. Benson	Atlanta	Fulton	1897
Marion T. Benson	Atlanta	Fulton	1900
W. W. Binion	Benevolence	Randolph	1893
T. F. Bivings	Vienna, S. Ga. As Dooly	Crisp	1897
A. H. Black	Thomaston	Upson	1909
M. H. Blaneford	Columbus	Muscogee	1909
C. A. Blanchard	Augusta	Richmond	1906
G. W. Blanton	Brunswick	Glynn	1907
J. C. Bloomfield	Athens	Clarke	1890
E. Bates Block	Atlanta	Fulton	1902
Roy Blosser	Atlanta	Fulton	1909
H. Boatright	Carrollton	Carroll	1906
Frank K. Boland	Atlanta	Fulton	1906
B. F. Bond	Cannon	Franklin	1909
Bonner	Lavonia	Franklin	1909
W. H. Born	McRae	Ocmulgee Ass'n	1902
G. W. Bordeaux	Chester	Ocmulgee	1909
J. F. Bowdon	Adairsville	Bartow	1905
J. W. Bowie	Summit	Emanuel	1907
R. E. Bowman	Bronwood	Terrell	1906
J. H. Bowen	Cannon	Franklin	1909
Chas. E. Boynton	Atlanta	Fulton	1900
D. M. Bradley	Waycross	Ware	1909
Mrs. Frances Bradley..	Atlanta	Fulton	1900
C. P. Brannen	Savannah	Georgia	1909
M. T. Bramblett	Cumming, R. F. D. 1..	Forsyth	1906
J. N. Brawner	Atlanta	Fulton	1909
Geo. P. Brice	Flowery Branch R.F.D.2	Forsyth	1906
B. L. Bridges	Ellaville	Sumter	1906
D. R. Bridges	Dawson	Terrell	1908
T. J. Bridges	Sylvester	Worth	1906

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
Wm. R. Brigham	Dublin	Laurens	1900
Frank Bright	Dublin	Laurens	1906
G. O. Brinkley	Savannah	Georgia	1906
F. M. Brock	Carrollton, R.F.D. 8	Carroll	1906
J. C. Brock	Carrollton	Carroll	1907
W. B. Brock	Tallapoosa	Haralson	1909
Harry Brooks	Augusta	Richmond	1906
E. C. Brown	Hawkinsville	Ocmulgee Ass'n	1905
Geo. Brown	Atlanta	Fulton	1899
J. L. Brown	Camilla	Mitchell	1906
Jas. Brown	Martin, R. F. D.	Franklin	1909
L. R. Brown	Sharon	Taliaferro	1909
V. L. Brown	Ft. Valley	Houston	1907
W. T. Brown	Atlanta	Fulton	1905
F. M. Bruce	Pineview, S. Ga. Ass'n.	Dooly, Crisp	1908
W. F. Brunner	Savannah	Georgia	1906
J. A. Bryan	Pendergrass	Jackson	1898
C. I. Bryans	Augusta	Richmond	1906
L. R. Bryson	Gainesville, R. F. D. 1	Hall	1907
C. R. Buchanan	Springvale	Randolph	1909
A. W. Buick	Goshen	Lincoln	1905
J. J. Buick	Double Branches	Lincoln	1909
O. H. Buford	Cartersville	Bartow	1904
W. L. Bullard	Columbus	Muscogee	1900
W. M. Bullard	Machen	Jasper	1897
G. A. Burch	Jacksonville	Ocmulgee Ass'n	1907
R. E. L. Burford	Brunswick	Glynn	1908
G. W. Burnett	Whitesburg	Carroll	1906
J. K. Burns	Clarkesville	Habersham	1897
A. M. Burt	Macon	Bibb	1896
Burtz	Acworth	Cobb	1909
J. A. Bussell	Rochelle	S. Ga. Med. Ass'n.	1909
C. F. Bush	Carnesville	Franklin	1909
I. A. Bush,* Jr.	Camilla	Mitchell	1906
J. A. Butts	Brunswick	Glynn	1907
J. M. Byne	Waynesboro	Burke	1907
J. Lee Byron	Jackson	Butts	1902
J. A. Byron	Pendergrass	Jackson	1909
J. C. Cail	Waycross	Ware	1909
A. T. Calhoun	Cartersville	Bartow	1894
F. P. Calhoun	Atlanta	Fulton	1908
A. W. Calhoun (V.-P.,C. P.)	Atlanta	Fulton	1874
J. B. Camp	Carrollton	Carroll	1906

NAME	POSTOFFICE	COUNTY	SOCIETY	ADMITTED
M. G. Campbell	Atlanta	Fulton		1906
W. E. Campbell	Atlanta	Fulton		1900
Campbell		Jasper		1909
G. T. Canning	Athens	Clarke		1908
W. A. Carlton	Athens	Clarke		1907
M. F. Carson	Griffin	Spalding		1897
N. T. Carswell	Macon	Bibb		1906
E. W. Carter	Prattsburg	Muscogee		1909
W. N. Carter	Columbus	Muscogee		1909
J. R. M. Carter	Carrollton	Carroll		1906
J. N. Carter	Savannah	Georgia		1905
L. A. Carter	Nashville	Berrien		1905
E. C. Cartledge	Atlanta	Fulton		1905
R. L. Cater	Perry	Houston		1904
F. L. Cato	Americus	Sumter		1893
R. E. Cato	Americus	Sumter		1893
H. E. Centers	Etowah, Tenn	Fannin		1907
G. F. Chambers	Columbus	Muscogee		1908
C. M. Chamblee	Adairsville	Bartow		1906
W. L. Champion	Atlanta	Fulton		1894
W. A. Chapman	Cedartown	Polk		1905
J. H. Chandler	Swainsboro	Emanuel		1907
Guy Chappell	Dawson	Terrell		1906
R. J. Chappell	Dudley	Laurens		1904
Thos. J. Charlton	Savannah	Georgia		1903
J. B. Chastain	Blue Ridge	Fannin		1906
J. N. Cheney	Silver Creek	Floyd		1905
J. B. Cheshire	Arlington	Tri-County		1909
L. M. Childs	Atlanta	Fulton		1909
J. F. Chisholm	Savannah	Georgia		1903
Alfred Christie	Brunswick	Glynn		1909
A. F. Christopher	Mineral Bluff	Fannin		1909
L. B. Clarke	Atlanta	Fulton		1906
M. A. Clark (V.-P., P.)	Macon	Bibb		1893
P. S. Clark	Darien	Georgia		1890
S. A. Clark	Eatonton	Putnam		1906
T. S. Clay	Savannah	Georgia		1903
A. B. Cleborne	Savannah	Georgia		1908
H. W. Clements	Lenox	Berrien		1908
J. R. Clements	Pelham	Mitchell		1906
G. P. Cline	Byron	Houston		1907
Eugena Clower	Cairo	Grady		1909
J. T. Cobb	Felton	Haralson		1909
J. D. Cobb	Flowery Branch	Hall		1906

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
M. S. Cohen	Fitzgerald	Irwin	1908
F. W. Coile	Wintersville	Clarke	1897
H. C. Cook	Bremen	Haralson	1909
A. B. Cole	Tallapoosa	Haralson	1909
J. E. Cole	Middleton	Elbert	1901
J. F. Cole	Carrollton	Carroll	1884
E. T. Coleman	Graymont	Emanuel	1905
J. D. Coleman	Henderson	Houston	1897
Thos. D. Coleman	Augusta	Richmond	1891
T. J. Collier	Atlanta	Fulton	1905
T. J. Collier	Griffin	Spalding	1899
O. F. Collum	Chauncey	Ocmulgee Ass'n	1908
E. Collum	Dawson, R. F. D.	Terrell	1908
H. C. Cook	Bremen	Haralson	1909
J. P. Cook	Colquitt	Tri-County	1902
V. C. Cooke	Atlanta	Fulton	1909
W. L. Cooke	Columbus	Muscogee	1907
Martin Cooley	Savannah	Georgia	1905
J. J. Cooper	Cedartown	Polk	1906
R. L. Cone	Groveland	Bulloch	1907
Webb Conn	Canton	Cherokee	1909
W. B. Conway	Athens	Clarke	1906
H. W. Copeland	Jackson	Butts	1906
M. X. Corbin	Savannah	Georgia	1898
W. W. Cornogg	Lavonia	Franklin	1909
J. A. Corry	Barnesville	Pike	1900
R. F. Corry	Macon	Bibb	1909
E. R. Corson	Savannah	Georgia	1895
J. H. Couch	Moreland	Coweta	1906
J. W. Cowart	Walden	Bibb	1904
C. H. Cox	Waynesboro	Burke	1907
R. P. Cox	Rome	Floyd	1891
Charles W. Crane	Augusta	Richmond	1906
W. J. Cranston	Milledgeville	Baldwin	1909
C. B. Crawford	Blue Ridge	Fannin	1906
Jas. H. Crawford	Martin	Stephens	1906
J. H. Crawford	Atlanta	Fulton	1906
W. B. Crawford	Savannah	Georgia	1903
W. B. Crawford	Lincolnton	Lincoln	1909
J. M. Crawford	Atlanta	Fulton	1909
Logan A. Crichton	Atlanta	Fulton	1900
A. L. Crittendon	Shellman	Randolph	1906
J. M. Crook	Columbus	Muscogee	1903
Martin Crook	Columbus	Muscogee	1906

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
J. D. Cromer	Atlanta	Fulton	1909
E. S. Cross	Savannah	Georgia	1909
M. M. Crowder	Tensington, R. F. D.	Walker	1906
W. A. Crowe	Atlanta	Fulton	1892
J. A. Crowther	Savannah	Georgia	1902
J. H. Crozier	Cedar Springs	Tri-County	1889
E. C. Crummey	Jesup	Wayne	1909
H. L. Culbertson	Amity	Lincoln	1909
W. F. Culpepper	Senoia	Coweta	1892
F. M. Cunningham	Macon	Bibb	1909
M. L. Currie	Vidalia	Toombs	1890
J. W. Curry	Rome	Floyd	1905
C. M. Curtis	College Park	Fulton	1905
D. Q. Dallas	Pavo	Thomas	1905
R. R. Daly	Atlanta	Fulton	1907
W. R. Dancy	Savannah	Georgia	1906
Byron Daniel	Cordele	So. Ga. Ass'n. Dooly, Crisp	1907
E. Daniel	Moultrie	Colquitt	1906
J. R. Daniel	Franklin	Heard	1907
J. W. Daniel	Savannah	Georgia	1898
O. Daniel	Tifton	Tift	1906
J. I. Darby	Columbus	Muscogee	1893
J. M. Daves	Blue Ridge	Fannin	1902
A. A. Davidson	Augusta	Richmond	1896
E. C. Davis	Atlanta	Fulton	1894
Jeff Davis	Toccoa	Stephens	1893
J. P. Davis	Riddleville	Washington	1903
J. V. Davis	Monticello	Jasper	1908
T. B. Davis	Newnan	Coweta	1892
W. L. Davis	Albany	Dougherty	1893
T. C. Davison	Atlanta	Fulton	1908
D. L. Deal	Pulaski	Pulloch	1909
M. P. Deadwiler	Maysville	Banks	1904
J. G. Dean	Dawson	Terrell	1889
A. J. Deas	Augusta	Richmond	1904
Wm. DeLay	Rome	Floyd	1906
A. G. DeLoach	Atlanta	Fulton	1907
E. J. Denson	Allentown	Willkinson	1909
John F. Denton	Atlanta	Fulton	1907
H. C. Derrick	Oglethorpe	Macon	1905
W. L. DesPortes	Columbus	Muscogee	1899
H. P. Derry	Macon	Bibb	1903
C. A. Dexter	Columbus	Muscogee	1905

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
H. P. Dickens	Ocilla	Irwin	1902
W. J. Dickson	Rebecca	Turner	1908
J. B. Dillard	Davisboro	Washington	1901
J. A. Dillashaw	Bowman	Elbert	1906
J. L. Dixon	Woodbury	Meriwether	1906
H. R. Donaldson	Atlanta	Fulton	1905
J. N. Dorminy	Seville..So. Ga. Ass'n.	Dooly, Crisp	1901
R. T. Dorsey, Jr.	Atlanta	Fulton	1902
R. T. Dorsey	Atlanta	Fulton	1909
H. W. Doster	Rocky Ford	Screven	1904
W. H. Doughty, Jr., (v.-p.),	Augusta	Richmond	1880
Jas. H. Downey	Gainesville	Hall	1904
G. W. Drawdy	Jesup	Waynes	1909
C. L. Drew	Willacoochee	Coffee	1907
T. E. Drewry	Griffin	Spalding	1892
P. Y. Duckett	Cornelia	Habersham	1909
D. E. Dudley	Savannah	Georgia	1908
J. W. Duncan	Atlanta	Fulton	1887
M. F. Dunn	Savannah	Georgia	1903
*H. G. Dunn	Dawson	Terrell	1909
D. H. DuPree	Athens	Clarke	1908
C. E. Earle	Elberton	Elbert	1909
J. G. Earnest	Atlanta	Fulton	1882
W. N. Edenfield	Pinehurst.S. Ga. Ass'n.	Dooly, Crisp	1907
John Edge	Toccoa	Stephens	1904
L. P. Eberhardt	Elberton	Elbert	1909
D. B. Edwards	Stilson	Bulloch	
W. E. Edwards	Cordele.So. Ga. Ass'n.	Dooly, Crisp	1897
D. G. Elder	Chickamauga	Walker	1906
E. B. Elder	Macon	Bibb	1900
Jos. G. Elder	Jefferson	Jackson	1906
J. T. Elder	Farmington, R. F. D.	Oconee	
S. A. Elder	High Shoals	Oconee	1900
W. S. Elkin	Atlanta	Fulton	1882
W. P. Ellis	Oakland	Meriwether	1909
J. N. Ellis	Atlanta	Fulton	1899
L. M. Ellis	Calvin	Jasper	1904
W. A. Ellison	Milledgeville	Baldwin	1906
J. O. Elrod	Forsyth	Monroe	1904
B. L. Embry	Villa Rica	Carroll	1900
W. B. Emery	Atlanta	Fulton	1900
H. L. Erwin	Dalton	Gordon	1907
J. M. Erwin	Calhoun	Gordon	1906

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
W. H. Estes	Leathersville	Lincoln	1909
S. G. Ethridge	Sparks	Berrien	1906
I. C. Evans	Columbus	Muscogee	1907
J. H. Evans	Sandersville	Washington	1897
H. J. Eve	Augusta	Richmond	1901
R. C. Eve	Augusta	Richmond	1907
W. S. Everett	Almon	Newton	1906
W. M. Fambrough	Bostwich	Morgan	1908
J. L. Farmer	Savannah	Georgia	1897
C. H. Ferguson	Thomasville	Thomas	1906
Edgar F. Fincher	East Atlanta	DeKalb	1906
L. C. Fisher	Atlanta	Fulton	1900
B. W. Fite	Resaca	Gordon	1899
P. W. Fitts	Greenville	Meriwether	1897
W. L. Fitts	Carrollton	Carroll	1890
A. Fleming	Waycross	Ware	1906
C. C. Fletcher	Moultrie	Colquitt	1907
T. D. Fletcher	Jenkinsburg	Butts	1909
A. P. Flowers	Atlanta	Fulton	1909
F. F. Floyd	Statesboro	Bulloch	1907
W. B. Floyd	Plainville	Gordon	1906
F. C. Folks	Waycross	Ware	1906
G. P. Folks	Waycross	Ware	1909
L. P. Fordham	Lovett	Laurens	1909
R. S. Fordham	Cochran	Ocmulgee Ass'n	1908
A. G. Fort	Lumpkin	Stewart	1905
J. A. Fort	Brewton	Laurens	1909
T. F. Fortson	Douglas	Coffee	1909
A. L. Fowler	Atlanta	Fulton	1900
R. L. Fox	Brunswick	Glynn	1909
Rufus Franklin	Graymont	Emanuel	1909
J. L. Franklin	Rome	Floyd	1909
V. E. Franklin	Graymont	Emanuel	1907
D. B. Frederick	Marshallville	Macon	1908
J. M. Freeman	Lavonia	Franklin	1909
H. M. Freeman	Toccoa	Stephens	1905
N. A. Frier	Bickley	Ware	1906
M. O. Fulcher	Waynesboro	Burke	1895
H. M. Fullilove	Athens	Clarke	1900
W. L. Funkhouser	Rome	Floyd	1905
Lewis M. Gaines	Atlanta	Fulton	1909
J. T. Gamage	Pineview	S. Ga. Ass'n. Dooly, Crisp	1903
W. H. Gardner	Dawson	Terrell	1909

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
T. R. Garlington	Rome	Floyd	1893
J. R. Garner	Atlanta	Fulton	1903
J. L. Garrard	Rome	Floyd	1908
W. T. Gautier	Columbus	Muscogee	1906
N. G. Gewinner	Macon	Bibb	1909
J. H. Gheesling	Greensboro	Greene	1909
W. D. Gholston	Danielsville	Madison	1902
O. C. Gibson	Macon	Bibb	1906
J. T. Gibson	Portersdale	Newton	1906
C. C. Giddens	Adel	Berrien	1908
C. G. Giddings	Atlanta	Fulton	1902
R. B. Gilbert	Greenville	Meriwether	1906
W. L. Gilbert	Atlanta	Fulton	1905
W. Y. Gilliam	Blue Ridge	Fannin	1909
R. P. Glenn	Columbus	Muscogee	1907
E. W. Glidden, Jr.	Savannah	Georgia	1909
W. H. Goodrich	Augusta	Richmond	1900
H. J. Goodwin	Roopville	Carroll	1905
R. C. Goolsby	Forsyth	Monroe	1891
A. J. Gordon	Waynesville	Glynn	1907
I. H. Goss	Athens	Clarke	1877
N. C. Goss	Cartecay	Fannin	1906
G. P. Gostin	Macon	Bibb	1902
J. C. Gower	Gainesville	Hall	1906
R. E. Graham	Nunez	Emanuel	1907
St. J. B. Graham	Ellijay	Fannin	1909
J. R. Graves	Zebulon	Pike	1906
G. T. Gray	Lyons	Toombs	1908
R. M. Gray	Everett Springs	Floyd	1906
L. A. Graybill	Oconee	Washington	1906
A. B. Green	Cartersville	Bartow	1906
E. M. Green	Milledgeville	Baldwin	1903
S. H. Green	Atlanta	Fulton	1892
Chas. A. Greer	Oglethorpe	Macon	1905
R. L. Grier	Lumpkin	Stewart	1908
J. C. Griffies	Carrollton, R. F. D. 9	Carroll	1905
W. C. Griffin	Cartersville	Bartow	1897
E. W. Griffin	Springfield	Georgia	1909
C. F. Griffith	Milner	Pike	1909
N. J. Grizzard	Atlanta	Fulton	1907
J. C. Groves	Lincolnton	Lincoln	1909
Chas. Haggard	Mableton	Cobb	1909
B. W. Hall	Bowman	Elbert	1906

NAME	POST OFFICE	COUNTY SOCIETY	ADMITTED
H. M. Hall	Cedartown	Polk	1907
J. H. Hall	Norman Park	Colquitt	1906
J. H. Hall	Lumber City	Ocmulgee Ass'n	1909
J. R. Hall	Carnesville	Franklin	1909
Thos. H. Hall	Macon	Bibb	1906
T. M. Hall	Milledgeville	Baldwin	1809
M. M. Hallum	Carrollton	Carroll	1906
J. H. Hammond	Lafayette	Walker	1898
L. P. Hammond	Rome	Floyd	1906
J. D. Hamrick	Carrollton	Carroll	1899
T. H. Hancock	Atlanta	Fulton	1898
J. H. Hand	Blakely	Tri-County	1907
R. M. Harbin (v.-p.)	Rome	Floyd	1894
W. P. Harbin	Rome	Floyd	1905
O. N. Harden	Homer, Route 1	Banks	1906
W. P. Harden	Commerce, R. F. D. 11	Banks	1903
L. S. Hardin	Atlanta	Fulton	1902
L. G. Hardman (v.-p.)	Commerce	Jackson	1877
W. B. Hardman	Commerce	Jackson	1892
G. L. Harmon	Savannah	Georgia	1909
J. W. Harper	Jackson	Butts	1906
T. F. Harper	Weston	Stewart	1906
J. P. Harrell	Brunswick	Glynn	1907
E. H. Harris	Midville	Burke	1903
H. F. Harris	Atlanta	Fulton	1902
H. W. Harris	Dawson	Terrell	1903
O. T. Harris	Alpharetta, R. F. D. 5	Forsyth	1908
R. V. Harris	Savannah	Georgia	1908
H. T. Harriss	Madison	Morgan	1907
D. C. Harrison	Harrison	Washington	1906
W. H. Harrison, Jr.	Augusta	Richmond	1886
C. C. Harrold	Macon	Bibb	1905
V. O. Harvard	Arabi	So. Ga. Ass'n. Dooly, Crisp	1900
J. E. Haslam	Marshallville	Macon	1908
W. C. Hays	Colquitt	Tri-County	1909
M. M. Head	Zebulon	Pike	1903
J. A. Hembree	Culloden	Monroe	1908
W. H. Hendricks	Tifton	Tift	1903
J. H. Hendry	Shellman	Randolph	1906
G. W. Heriot	Savannah	Georgia	1903
H. A. Herrman	Sandersville	Washington	1904
J. D. Herrman	Eastman	Ocmulgee Ass'n	1884
H. W. Hesse	Savannah	Georgia	1903

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
A. R. Heyward	Warwick. So. Ga. Ass'n.	Dooly, Crisp	1906
H. E. Hice	Pittsburg	Walker	1900
J. L. Hiers (V.-P.)	Savannah	Georgia	1895
E. D. Highsmith	Atlanta	Fulton	1908
W. S. Hill	Pelham	Mitchell	1900
A. H. Hilsman	Albany	Dougherty	1901
P. L. Hilsman	Albany	Dougherty	1871
J. H. Hines	Atlanta	Fulton	1906
J. W. Hinton	High Shoals	Oconee	1906
W. T. Hinton	Dacula	Gwinnett	1906
A. G. Hobbs	Atlanta	Fulton	1882
Jno. H. Hockenhull	Cumming	Forsyth	1906
T. C. Hodge	Atlanta	Fulton	[illegible]
F. G. Hodgson	Atlanta	Fulton	1905
A. R. Hogg	Haralson	Coweta	1906
M. Hoke	Atlanta	Fulton	1901
M. M. Holland	Statesboro	Bulloch	1898
W. Z. Holliday (P.)	———	———	1884
A. C. Holliday	Athens	Clarke	1909
R. L. Hollis	Hayston	Newton	1905
C. E. Holmes	Millen	Jenkins	1907
O. L. Holmes	Covington, R. F. D.	Newton	1904
J. B. S. Holmes (V.-P., P.)	Valdosta	Fulton	1872
Quitman Holton	Broxton	Coffee	1907
H. M. Holtzclaw	Perry	Houston	1907
J. C. Hooten	Columbus	Muscogee	1909
E. D. Hope	Macon	Bibb	1906
W. R. Houston	Augusta	Richmond	1906
W. H. Houston	Americus, R. F. D.	Sumter	1909
C. N. Howard	Columbus	Muscogee	1903
H. L. Howard	Macon	Bibb	1904
W. S. Howell	Moultrie	Colquitt	1906
J. S. Howkins	Savannah	Georgia	1906
F. M. Hubbard	Commerce	Jackson	1900
T. V. Hubbard	Atlanta	Fulton	1896
G. P. Huguley	Atlanta	Fulton	1899
J. M. Hull	Augusta	Richmond	1906
M. McH. Hull	Atlanta	Fulton	1900
Ashbury Hull	Augusta	Richmond	1909
J. E. Hunt	Mt. Vernon	Toombs	1907
J. P. Hunter	Kensington	Walker	1906
Thos. A. Hurley	Macon	Bibb	1909
Jno. S. Hurt	Atlanta	Fulton	1906

NAME	POSTOFFICE	COUNTY	SOCIETY	ADMITTED
M. B. Hutchins	Atlanta	Fulton		1892
J. A. Hutson	Bremen	Haralson		1908
J. E. D. Isbell	Toccoa	Stephens		1905
J. N. Isler	Meigs	Thomas		1906
Jas. E. Ivey	Rome	Floyd		1906
R. P. Izlar	Waycross	Ware		1898
J. B. Jackson	Clarkesville	Habersham		1906
J. C. Jackson	Newnan, R. F. D.	Coweta		1906
J. L. Jackson	Savannah	Georgia		1907
Max Jackson	Macon	Bibb		1897
W. A. Jackson	Atlanta	Fulton		1905
B. B. Jameson	Columbus	Muscogee		1902
J. A. Jarrell	Jackson	Butts		1899
J. G. Jarrell	Savannah	Georgia		1899
J. L. Jarvis	Atlanta	Fulton		1906
N. P. Jelks	Hawkinsville	Ocmulgee Ass'n		1882
C. J. Jenkins	Edison	Tri-County		1900
W. L. Jenkins	Moultrie	Colquitt		1909
R. H. Jenkins	Hogansville	Troup		1906
E. M. Jennings	Menlo	Walker		1907
W. D. Jennings, Jr.	Augusta	Richmond		1907
W. J. Jennings	Blakely	Tri-County		1907
J. H. Johns	Atlanta	Fulton		1905
F. C. Johnson	Walden	Bibb		1906
L. C. Johnstone	Walden	Bibb		1906
G. H. Johnson	Savannah	Georgia		1902
J. C. Johnson	Atlanta	Fulton		1894
J. E. Johnson	Elberton	Elbert		1906
J. E. L. Johnson	Roberta	Houston		1907
J. H. Johnson	Columbus	Muscogee		1908
M. M. Johnson	Waycross	Ware		1905
O. H. Johnson	Athens	Clarke		1908
G. F. Johnston	Griffin	Spalding		1906
J. J. Johnston	Lafayette	Walker		1906
M. T. Johnson	Dacula	Gwinnett		1909
J. A. Johnson	Augusta	Richmond		1909
F. J. Jones	Newnan	Coweta		1909
W. A. N. Jones	Gainesville	Forsyth		1909
B. B. Jones	Metter	Bulloch		1908
H. A. Jones	Millen	Jenkins		1898
Jabez Jones	Savannah	Georgia		1902
L. M. Jones	Milledgeville	Baldwin		1880
Thos. J. Jones	Newnan	Coweta		1906

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
Willis B. Jones	Atlanta	Fulton	1906
W. T. Jones	Atlanta	Fulton	1905
G. W. Julian	Tifton	Tift	1906
P. H. Keaton	Kestler	Tri-County	1889
W. C. Kellogg	Augusta	Richmond	1905
G. S. Kelly	Lawrenceville	Gwinnett	1908
J. M. Kelly	Griffin	Spalding	1907
W. M. Kemp	Marietta	Cobb	1906
R. S. Kenan	Savannah	Georgia	1906
W. S. Kendrick (o.)	Atlanta	Fulton	1874
J. P. Kennedy	Atlanta	Fulton	1900
W. C. Kennedy	Bellmont	Hall	1908
W. D. Kennedy	Metter	Bulloch	1902
E. H. Kennimer	Bishop	Oconee	1906
B. M. Kennon	McRae	Ocmulgee Ass'n	1903
J. M. Kenyon	Richland	Stewart	1903
O. T. Kenyon	Dawson	Terrell	1892
F. P. Key	Nashville	Berrien	1906
A. J. Kilpatrick	Augusta	Richmond	1906
R. R. Kime	Atlanta	Fulton	1892
J. O. Kinard	Atlanta	Fulton	1909
J. C. King	Atlanta	Fulton	1900
J. R. Kinney	Fort Valley	Houston	1907
J. L. Kirkendol	Millen	Jenkins	1904
J. A. Kitchens	Gainesville, R. F. D. 11.	Hall	1909
T. N. Kitchens	Columbus	Muscogee	1907
L. Lamar	Dawson	Terrell	1903
O. H. Lamb	Demorest	Habersham	1906
R. B. Lamb	Demorest	Habersham	1907
J. W. Lambert	Luthersville	Meriwether	1909
J. F. Lancaster	Forsyth	Monroe	1906
R. Y. Lane	Millen	Jenkins	1907
J. E. Lanier	Moultrie	Colquitt	1907
L. H. Lanier	Marlow	Georgia	1909
J. H. Lattimer	Waycross	Ware	1906
Ralston Lattimore (v.-p.)	Savannah	Georgia	1898
Lawrence Lee	Savannah	Georgia	1906
J. N. LeConte	Atlanta	Fulton	1900
J. E. Lee	Waycross	Ware	1902
R. D. Lee	Newnan	Coweta	1907
W. G. Lee	Macon	Bibb	1904
J. L. Lee	Pinehurst	Ocmulgee	1909
G. H. Lehmann	Augusta	Richmond	1906

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
W. P. Leonard	Talbotton	Talbot	1908
J. E. Lester	Marietta	Cobb	1906
L. J. Lesueur	Roberta	Crawford	1909
F. L. Lewis	Camilla	Mitchell	1906
J. H. Lewis	Dawson	Terrell	1900
M. S. Levy	Augusta	Richmond	1906
J. A. Liddell	Cedartown	Polk	1899
S. B. Liggin	Montezuma	Macon	1908
H. G. Lightner	Ideal	Macon	1908
A. H. Lindorme	Atlanta	Fulton	1905
J. A. Lindsay	Cairo	Grady	1909
R. C. Lindsey	Moultrie	Colquitt	1906
T. L. Lipscomb	Cumming, R. F. D. 1.	Forsyth	1907
W. E. Lipscomb	Cumming, R. F. D. 1.	Forsyth	1908
A. G. Little	Valdosta	Ware	1902
Wm. J. Little	Macon	Bibb	1898
Y. A. Little	Milledgeville	Baldwin	1906
A. D. Little	Thomasville	Thomas	1909
J. R. Littleton	Augusta	Richmond	1906
M. M. Lively	Statesboro	Bulloch	1905
Hugh M. Lokey	Atlanta	Fulton	1900
B. W. Lockhart	Lula, R. F. D. 1	Hall	1899
V. D. Lockhart (v.-p.)	Mayesville	Banks	1891
L. P. Longino	Milledgeville	Baldwin	1907
T. C. Longino	Atlanta	Fulton	1905
T. D. Longino	Atlanta	Fulton	1905
L. B. Lovett	Sparks	Berrien	1906
W. R. Lovett	Sylvania	Screven	1906
J. L. Lovvorn	Bowden	Carroll	1894
T. Lowry	Euharlee	Bartow	1905
G. R. Luke	Ashburn	Turner	1907
J. C. Luke	Ocilla	Irwin & Ben Hill	1906
G. G. Lunsford	Sylvester	Worth	1909
J. F. Lunsford	Preston	Stewart	1903
W. C. Lyle	Augusta	Richmond	1896
T. H. Lyon	Martin	Stephens	1906
J. C. McAfee	Macon	Bibb	1899
J. M. S. McAllister	Rochelle	So. Ga. Med. Ass'n	1909
T. J. McArthur	Cordele. S. Ga. Ass'n.	Dooly, Crisp	1897
W. L. McBath	Avalon	Stephens	1900
L. C. McBride	Oconee	Washington	1906
Wm. R. McCall	LaGrange	Troup	1907
L. O. McCalla	Eatonton	Putnam	1906

NAME	POST OFFICE	COUNTY SOCIETY	ADMITTED
H. C. McCrackin	Register	Bulloch	1908
Lee McCrary	Royston	Franklin	1909
Jno. McCrary	Royston	Franklin	1909
J. A. McCrea	Tifton	Tift	1906
H. H. McConley	Waynesboro	Burke	1909
M. M. McCord	Whigham	Grady	1909
E. C. McCurdy	Shellman	Randolph	1906
J. M. McDonald	McDonald	Coffee	1901
J. H. McDuffie	Columbus	Muscogee	1893
D. E. McEachern	Statesboro	Bulloch	1907
S. L. McElroy	Willacoochee	Coffee	1903
J. M. McElveen	Brooklet	Bulloch	1908
H. H. McGee	Savannah	Georgia	1906
Henry McHatton (c., v.-p., p.)	Macon	Bibb	1883
Mary E. McKay	Macon	Bibb	1904
G. S. McKenzie	Arabi..So. Ga. Ass'n	Dooly, Crisp	1907
J. S. McKenzie	Cordele..So. Ga. Ass'n.	Dooly, Crisp	1908
J. C. McKinney	Athens	Clarke	1907
W. T. McKinney	Cave Spring	Floyd	1907
C. F. McLain	Calhoun	Gordon	1903
J. W. McLain	Pelham	Mitchell	1908
R. D. McLeod	Lyons	Toombs	1907
D. E. McMaster	Tennille	Washington	1894
Wm. McNaughton	Covena	Emanuel	1901
R. J. McNeil	Danburg	Wilkes	1906
F. W. McRae	Atlanta	Fulton	1887
C. D. McRae	Rochelle	So. Ga. Med Ass'n.	1909
J. P. McWilliams	Lafayette, R. F. D. 3..	Walker	1906
T. M. McWhorter	Rutledge	Morgan	1908
G. W. Malone	Sandersville	Washington	1906
J. D. Malone	Marietta	Cobb	1891
S. B. Malone	Sandersville	Washington	1906
W. H. Malone	Mt. Zion	Carroll	1906
J. K. Maloy	Beach	Ware	1909
H. S. Maloy	Milan	Ocmulgee Ass'n	1908
W. C. Maloy	Rhine	Ocmulgee Ass'n	1893
D. J. Manget	Atlanta	Fulton	1907
G. R. Maner	Warrenton	Warren	1909
J. E. Mangham	Reynolds	Taylor	1909
J. O. Mann	Elko	Houston	1899
R. A. Mallory	Concord	Pike	1893
H. R. Marchman	Villa Rica	Carroll	1900
F. M. Martin	Shellman	Randolph	1907

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
H. H. Martin	Savannah	Georgia	1902
J. A. Martin	Mt. Zion	Carroll	1906
J. W. Martin	Marshallville	Macon	1908
R. V. Martin	Savannah	Georgia	1907
A. W. Martin	Carnesville	Franklin	1909
F. A. Martin	Tallapoosa	Haralson	1909
A. W. Martin	Carnesville	Ocmulgee	1909
M. Abbi Massoud	Stilmore	Emanuel	1909
C. H. Maxwell	Calvary	Grady	1909
A. J. Mathews	Elberton	Elbert	1906
M. F. Mathews	Athens	Clarke	1898
W. A. Mathews	Hawkinsville	Ocmulgee Ass'n	1907
W. J. Mathews	Elberton	Elbert	1892
Jno. D. Mauldin	New Holland	Hall	1906
D. B. Mayes	Americus	Sumter	1907
James Mayhugh	Cartersville	Bartow	1908
Jas. Mayhugh	Sutallee	Cherokee	1909
Chas. H. Meldrim	Belfast	Georgia	1909
D. H. Meeks	Nichols	Coffee	1906
H. M. Michel	Augusta	Richmond	1906
C. M. Mickle	Texas	Heard	1905
J. D. Middlebrooks	Powder Springs	Cobb	1903
Clifford Miller	Rocky Ford, R. 1	Bulloch	1908
G. T. Miller	Macon	Bibb	1908
J. N. Miller	Fender	Tift	1908
R. L. Miller	Waynesboro	Washington	1901
W. E. Miller	Eastman	Ocmulgee Ass'n	1902
G. W. Mills	Calhoun	Gordon	1906
C. T. Milner	Waynesboro	Burke	1909
K. W. Milligan	Augusta	Richmond	1909
S. W. Mims	Sylvania	Screven	1906
Geo. M. Mitchell	Barnesville	Pike	1908
T. E. Mitchell	Columbus	Muscogee	1896
H. A. Mobley	Vienna..So. Ga. Ass'n.	Dooly, Crisp	1891
J. W. Mobley	Milledgeville	Baldwin	1901
J. T. Moncrieff	Columbus	Muscogee	1906
H. S. Monroe	Columbus	Muscogee	1907
D. H. Monroe	Emerson	Bartow	1906
C. J. Montgomery	Augusta	Richmond	1895
D. C. Montgomery	Thomasville	Thomas	1906
A. J. Mooney	Statesboro	Bulloch	1907
B. R. Moore	Temple	Carroll	1906
G. Y. Moore	Cuthbert	Randolph	1906

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
J. L. Moore	Griffin	Spalding	1903
Johnson M. Moore	Macon	Bibb	1897
K. P. Moore (V.-P., P., S., O., T.)	Macon	Bibb	1871
N. M. Moore	Augusta	Richmond	1901
W. A. Moore	Alapaha	Berrien	1906
W. B. Moore	Eatonton	Putnam	1906
W. R. Moore	Patterson	Pierce	1908
D. L. Moore	Jesup	Wayne	1909
R. M. Moore	Waleska	Cherokee	1909
I. W. Moorman	Ambrose	Coffee	1900
J. B. Morgan (V.-P., P.)	Augusta	Richmond	1891
R. J. Morgan	Cochran	Ocmulgee Ass'n	1907
W. E. Morgan	LaGrange	Troup	1909
A. A. Morrison	Savannah	Georgia	1902
J. E. Morrison	Savannah	Georgia	1909
R. C. Moseley	Bolingbroke	Monroe	1899
F. G. Moss	Royston	Franklin	1909
G. W. Mountain	Augusta	Richmond	1906
T. R. Moye	Abbeville	So. Ga. Med. Ass'n	1909
W. A. Mulherin	Augusta	Richmond	1905
F. M. Mullino	Montezuma	Macon	1908
J. L. Murdock	Lindale	Floyd	1906
E. E. Murphy	Augusta	Richmond	1900
C. E. Murphy	Atlanta	Fulton	1901
M. W. Murphy	Ringgold	Walker	1907
W. N. Nanney	Mt. Pleasant	Ware	1907
L. Napier	Lumber City	Ocmulgee Ass'n	1904
R. D. Nash	Warrenton	Warren	1909
J. W. Neal	Scotland	Ocmulgee	1909
J. H. Neall	Atlanta	Fulton	1909
M. F. Nelms	Commerce	Jackson	1909
G. W. Nelson	Marshallville	Macon	1909
T. H. Nelson	Alamo	Ocmulgee	1909
J. C. Nevils	Register, R. F. D. 1	Bulloch	1908
J. E. New	Dexter	Dublin	1909
J. W. Newnan	Buchanan	Haralson	1909
E. New	Dublin	Laurens	1906
J. P. Newman	Macon, R. F. D. 2	Bibb	1906
W. P. Nicolson (P.)	Atlanta	Fulton	1883
Geo. M. Niles	Atlanta	Fulton	1909
D. B. Nisbet	Eatonton	Putnam	1909
Geo. H. Noble (P.)	Atlanta	Fulton	1883
C. T. Nolan	Marietta	Cobb	1899

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
G. M. Norton	Savannah	Georgia	1899
W. A. Norton	Savannah	Georgia	1906
W. E. Norton	Savannah	Georgia	1907
A. C. North	Newnan	Coweta	1909
Thos. Edwin Nott	Gainesville Cot. Mills.	Hall	1907
P. C. Nunn	Davisboro	Washington	1906
R. J. Nunn (C., V.-P., P.)	Savannah	Georgia	1867
J. T. Nunnally	Griffin	Spalding	1906
Mark H. O'Daniel (O., C., V.-P.)	Jeffersonville	Twiggs	1882
T. E. Oden	Blackshear	Ware	1905
W. W. Odom	Lyons	Toombs	1908
T. E. Oertel	Augusta	Richmond	1900
C. R. Oglesby	Waycross	Ware	1906
J. V. P. Oglesby	Atlanta	Fulton	1908
J. B. Oglesby	Atlanta	Fulton	1909
A. S. Oliver	Elberton	Elbert	1906
W. E. Oliver	Cairo	Grady	1909
B. P. Oliveros	Savannah	Georgia	1903
J. C. Olmsted	Atlanta	Fulton	1886
R. J. O'Neal	Langdale, Ala	Troup	1906
Jno. H. O'Quin	Patterson	Pierce	1908
W. B. O'Rear	Savannah	Georgia	1903
L. N. Osborn	Maysville, R. F. D.	Jackson	1906
J. A. Otwell	Cumming	Forsyth	1907
S. P. Ousley	Macon	Bibb	1906
G. M. Overstreet	Sylvania	Screven	1899
W. W. Owens	Savannah	Georgia	1891
J. M. Page	Dublin	Laurens	1904
J. B. Palmer	Thomasville	Thomas	1906
J. W. Palmer	Ailey	Montgomery	1908
S. B. Palmer	Macon	Bibb	1905
W. H. Parker	Mize	Stephens	1906
G. M. Parker	Carnesville	Franklin	1909
W. B. Parks	Atlanta	Fulton	1882
J. Z. Patrick	Pulaski	Bulloch	1905
W. L. Patten	Milltown	Berrien	1895
F. D. Patterson	Cuthbert	Randolph	1895
J. C. Patterson	Lumpkin	Stewart	1894
J. W. Patterson	Dawson	Terrell	1903
L. T. Pattillo	Atlanta	Fulton	1905
Geo. A. Paulk	Alapaha	Berrien	1906
J. E. Paullin	Atlanta	Fulton	1907
Geo. F. Payne	Atlanta	Fulton	1894
B. E. Pearce	Atlanta	Fulton	1906

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
C. W. Peek	Cedartown, R. F. D. ..	Polk	1906
W. W. Peek	Louvale	Stewart	1906
J. E. Pennington	Esom Hill	Polk	1906
Paul Penniston	Newnan	Coweta	1906
W. H. Perkinson	Marietta	Cobb	1900
N. Peterson	Tifton	Tift	1897
S. L. Phillips	Savannah	Georgia	1909
T. J. Phillips	Griffin, R. F. D.	Spalding	1906
C. E. Pickett	Richland	Stewart	1906
W. W. Pilcher	Warrenton	Warren	1909
J. W. Pinkston	Greenville	Meriwether	1906
B. W. Pirkle	Gainesville, R. 11	Forsyth	1906
W. W. Pirkle	Cumming, R. F. D. 2..	Forsyth	1907
Benj. G. Poer	Broxton	Coffee	1907
J. M. Poer	West Point	Troup	1900
J. W. Polhill	Hawkinsville	Ocmulgee	1909
W. P. Ponder	Forsyth	Monroe	1885
J. L. Porter	Rutledge	Morgan	1907
B. C. Powell	Villa Rica	Carroll	1896
B. F. Powell	Sylvania	Screven	1906
J. F. Powell	Gresstown, R. F. D..	Ocmulgee Ass'n	1893
Jas. T. Prevatt	Monticello	Jasper	1908
J. M. Price	Tifton	Tift	1907
E. L. Prince	Morganton	Fannin	1906
Felix M. Prior	Apalachee	Morgan	1907
J. P. Proctor	Athens	Clarke	1906
Wm. C. Pumpelly	Macon	Bibb	1906
B. S. Purse	Savannah	Georgia	1895
Wylie Quillian	Belltown	Hall	1908
W. Y. Quillian	Copper Hill, Tenn	Fannin	1909
C. M. Rakestraw	Savannah	Georgia	1909
C. C. Ramsey	St. Marks	Meriwether	1909
John H. Randle	Porterdale, R. F. D. 1..	Newton	1907
Wm. Rawlings	Sandersville	Washington	1906
C. D. Redding	Warthen	Washington	1897
J. H. Redding	Waycross	Ware	1893
Ward Redwine	Cassville	Bartow	1906
D. S. Reese	Lowell	Carroll	1907
S. T. Register	Norman Park	Colquitt	1907
C. W. Reid	Pelham	Mitchell	1897
K. L. Reid	Atlanta	Fulton	1905
R. S. Reid	Savannah	Georgia	1903
Herbert Respess	Macon	Bibb	1907

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
H. V. Reynolds	Marietta	Cobb	1899
W. H. Reynolds	Lexington	Clarke	1899
Jno. A. Rhodes	Crawfordville	Taliaferro	1909
E. P. Rice	Augusta	Richmond	1906
J. D. Rice	Homer	Banks	1906
C. H. Richardson	Montezuma	Macon	1886
G. M. Ricketson	Broxton	Coffee	1907
C. F. Riden	Bostwick	Morgan	1907
G. T. Ridgeway	Royston	Franklin	1909
H. A. Righton	Savannah	Georgia	1909
Chas. L. Ridley	Hillsboro	Jasper	1908
R. B. Ridley, Jr.	Atlanta	Fulton	1902
B. F. Riley	Thomson	McDuffie	1905
C. R. Riner	Summit	Emanuel	1907
J. C. Rippard	Waycross	Ware	1898
W. A. Rivers	Glenwood	Toombs	1908
G. S. Roache	Woodcliff	Screven	1909
H. B. Roberts	Cordele..So. Ga. Ass'n.	Dooly, Crisp	1907
J. B. Roberts	Atlanta	Fulton	1875
O. W. Roberts	Carrollton, R. F. D. 4.	Carroll	1907
S. R. Roberts	Atlanta	Fulton	1905
C. W. Roberts	Douglas	Coffee	1909
T. Z. Roberts	Barge	Carroll	1909
P. E. B. Robertson	Gainesville	Hall	1906
Hugo Robinson	Albany	Dougherty	1906
W. C. Robinson	Atlanta	Fulton	1897
F. S. Rogers	Coleman	Randolph	1900
J. T. Rogers	Savannah	Georgia	1900
T. E. Rogers	Barge	Carroll	1906
W. D. Rogers	Kensington	Walker	1907
W. T. Rogers	Coleman	Randolph	1906
O. L. Rogers	Sandersville	Washington	1909
J. N. Roland	Yonkers	Ocmulgee	1909
J. C. Rollins	Dalton	Gordon	1909
W. F. Rosborough	Augusta	Richmond	1906
Jno. R. Rose	Brunswick	Glynn	1909
Jas. T. Ross	Macon	Bibb	1891
L. C. Roughlin	Atlanta	Fulton	1905
W. J. Rowe	Burford	Gwinnett	1906
Dunbar Roy	Atlanta	Fulton	1892
C. C. L. Rudicil	Chickamauga	Walker	1905
H. L. Rudolph	Gainesville	Hall	1904
Jno. B. Rudolph	Gainesville	Hall	1906
S. Rumble	Barnesville	Pike	1891

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
W. P. Rushin	Macon	Bibb	1906
W. W. Rutland	Ashburn	Turner	1907
H. M. Sale	Tignall, R. F. D.	Wilkes	1906
M. M. Saliba	Savannah	Georgia	1902
R. L. Sample	Statesboro	Bulloch	1902
S. E. Sanchez	Barwick	Thomas	1904
Lætus Saunders	Commerce	Jackson	1906
W. E. Saunders	Arlington	Tri-County	1907
Miss Annie Sawyer	Atlanta	Fulton	1906
F. W. Schnauss	Cecil	Berrien	1907
J. A. Selden	Macon	Bibb	1906
W. A. Selman	Atlanta	Fulton	1905
J. L. Selman	Douglasville	Douglas	1901
Guy S. Selman	Rays Mills	Berrien	1909
W. C. Sessoms	Brewton	Laurens	1904
J. R. Sewell	Ashland	Franklin	1909
J. W. Seymour	Deweyrose	Elbert	1909
A. C. Shamblin	Rome	Floyd	1908
O. E. Shankle	Commerce	Jackson	1906
J. R. Shannon	Forsyth, R. F. D. 1	Monroe	1893
C. K. Sharp	Arlington	Tri-County	1900
L. J. Sharp	Commerce	Jackson	1898
W. B. Sharp	Atlanta	Fulton	1900
H. W. Shaw	Augusta	Richmond	1907
W. J. Shaw	Rome	Floyd	1905
T. G. Sheats	Carrollton	Carroll	1908
T. E. Sheffield	Cedar Springs	Colquitt	1908
W. M. Shepard	Adel	Berrien	1906
J. L. Shepard	Carnegie	Randolph	1909
J. A. Shields	Lafayette, R. F. D. 3	Walker	1906
H. H. Shipp	Finleyson, So. Ga. As.	Dooly, Crisp	1906
J. H. Shorter	Macon	Bibb	1893
J. M. Sigman	Savannah	Georgia	1905
Chas. Silverman	Savannah	Georgia	1906
A. B. Simmons	Savannah	Georgia	1891
J. W. Simmons, Jr.	Brunswick	Glynn	1907
R. O. Simmons	Rome, R. F. D. 2	Floyd	1907
A. W. Simpson	Washington	Wilkes	1905
H. T. Simpson	Smithville	Sumter	1907
J. Ross Simpson	Atlanta	Fulton	1906
R. A. Simpson	Washington	Wilkes	1906
W. T. Simpson	Smithville	Sumter	1892
E. H. Sims	Columbus	Muscogee	1892
W. C. Sims	Richland	Stewart	1907

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
O. G. Singleton	Fort Valley	Houston	1892
H. R. Slack	LaGrange	Troup	1893
J. B. Smith	.....	.....	1909
B. T. Smith	Carnesville	Franklin	1909
J. C. Smith	Mansfield	Newton	1900
A. L. Smith	Empire	Ocmulgee	1909
A. A. Smith, (V.-P., P.)	Hawkinsville	Ocmulgee Ass'n	1875
A. C. Smith	Elberton, R. F. D. 6	Elbert	1890
Archibald Smith	Atlanta	Fulton	1903
Claude A. Smith	Atlanta	Fulton	1900
Ephriam Smith	Atlanta	Fulton	1906
Geo. L. Smith	Swainsboro	Emanuel	1905
Henry M. Smith	Edgewood	DeKalb	1900
J. C. Smith	Mansfield	Newton	1900
J. E. W. Smith	Waycross	Ware	1906
J. M. Smith	Valdosta	Ware Co.	1909
Linton S. Smith	Edgewood	DeKalb	1905
Louis Smith	Milltown	Berrien	1908
M. R. Smith	Cordele. So. Ga. Ass'n.	Dooly, Crisp	1907
S. J. Smith	Jefferson	Jackson	1906
S. P. Smith	Cornelia	Habersham	1909
S. S. Smith	Athens	Clarke	1907
W. J. Smith	Juliette	Monroe	1908
W. Monroe Smith	Atlanta	Fulton	1900
Wm. T. Smith	Tifton	Tift	1907
W. W. Smith	Clio	Georgia	1907
J. E. Sommerfield	Atlanta	Fulton	1899
A. J. Speer	Cornelia	Habersham	1909
J. M. Spence	Camilla	Mitchell	1906
R. N. Spinks	Cedartown	Polk	1900
H. L. Spring	Sumner	Worth	1908
T. M. Spruell	Temple	Carroll	1906
W. B. Standifer	Blakely	Tri-County	1886
R. H. Stanley	Albany	Dougherty	1902
H. B. Stanley	Savannah	Georgia	1907
M. M. Stapler	Macon	Bibb	1897
C. E. Stapleton	Brooklet, R. F. D. 1	Bulloch	1907
W. H. Steele	Jackson, R. F. D.	Butts	1905
V. P. Stevens	Poulan	Worth	1908
C. A. Stevenson	Camilla	Mitchell	1909
W. W. Stewart	Columbus	Muscogee	1909
J. A. Stewart	Rocky Ford	Bulloch	1909
J. T. Stewart	Griffin	Spalding	1906
C. C. Stockard	Atlanta	Fulton	1896

NAME	POSTOFFICE	COUNTY SOCIETY	ADMITTED
C. C. Stockard, Jr.	Atlanta	Fulton	1909
J. J. Stone	Hawkinsville	Ocmulgee Ass'n	1903
R. G. Stone	Hawkinsville	Ocmulgee Ass'n	1908
A. H. Story	Augusta	Richmond	1906
J. W. Story	Kathleen	Houston	1907
W. L. Story	Ashburn	Turner	1897
Z. M. Story	Winfield	McDuffie	1906
W. L. Stothart	Savannah	Georgia	1907
A. J. S. Stovall	Elberton	Elbert	1896
R. H. Stovall	Vienna..So. Ga. Ass'n.	Dooly, Crisp	1906
M. N. Stow	Jesup	Waynes	1909
A. Strickland	Cumming	Forsyth	1906
H. C. Strickland	Athens, R. F. D.	Jackson	1900
J. M. Strickland	Austell	Cobb	1906
J. O. Strickland	Pembroke	Georgia	1907
C. W. Strickler	Atlanta	Fulton	1900
E. O. Stuckey	Atlanta	Fulton	1909
J. E. Summerlin	Hartsfield	Colquitt	1909
G. S. Sumner	Shingler	Worth	1909
F. M. Sutton	Atlanta	Fulton	1904
B. G. Swanson	Atlanta	Fulton	1909
R. C. Swint	Milledgeville	Baldwin	1902
V. H. Taliaferro	Eatonton	Putnam	1906
J. V. Talley	Milltown	Berrien	1908
R. E. Talley	LaFayette	Walker	1909
J. B. Tanner	Lumpkin, R. F. D. 2..	Stewart	1906
W. H. Tanner	Newnan, R. F. D.	Coweta	1906
J. S. Tankersley	Ellijay	Fannin	1894
W. B. Tate, (Y.-P.)	Tate	Pickens	1890
A. P. Taylor	Thomasville	Thomas	1873
C. E. Taylor	Cochran	Ocmulgee Ass'n	1907
W. E. Taylor	Atlanta	Fulton	1905
Jno. O. Teasley	Lily ....So. Ga. Ass'n	Dooly, Crisp	1907
Andrew Temple	Statesboro, R. 1	Bulloch	1907
H. W. Terrell	LaGrange	Troup	1900
J. H. Terrell	Toccoa	Stephens	1906
E. B. Terrell	Greenville	Meriwether	1909
L. P. Tessier	Augusta	Richmond	1906
J. W. Thaxton	Jackson, R. F. D.	Butts	1906
H. K. Thayer	Brooklet	Bulloch	1907
R. H. Thigpen	Sandersville	Washington	1907
D. L. Thomas	Eatonton	Putnam	1900
J. M. Thomas	Griffin	Spalding	1894
Logan Thomas	Dawson	Terrell	1906

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
M. R. Thomas	Savannah	Georgia	1906
J. D. Thompson	Atlanta	Fulton	1908
R. M. Thomson, (V.-P.)	Savannah	Georgia	1894
E. C. Thrash	Atlanta	Fulton	1899
T. H. Thrasher	Ashburn	Turner	1899
D. N. Thompson	Elberton	Elbert	1909
T. C. Thompson	Vidalia	Toombs	1909
J. C. Trentham	Cedartown, R. F. D.	Polk	1909
J. S. Todd, (o., c., p.)	Atlanta	Fulton	1872
J. L. Tracy	Sylvester	Worth	1906
J. K. Train	Savannah	Georgia	1904
Wm. D. Travis	Covington	Newton	1898
G. A. Traylor	Augusta	Richmond	1906
G. C. Trimble	East Point	Fulton	1891
R. W. Trotter	Madison	Morgan	1894
J. H. Trout	Madison	Morgan	1905
C. L. Tucker	McDonough	Spalding	1909
F. V. Turk	Stilesboro	Bartow	1899
Jno. M. Turk	Canton	Cherokee	1906
Jno. P. Turk	Nelson	Cherokee	1905
H. A. Turner	Rome	Floyd	1906
W. J. Turner	Ashburn	Turner	1897
W. A. Turner	Newnan	Coweta	1909
J. G. Tuten	Jesup	Wayne	1909
C. O. Tye	Edison	Tri-County	1907
W. E. Tyson	Chula	Tift	1907
J. M. Underwood	LaFayette	Walker	1903
T. G. Underwood	Mayesville	Banks	1905
A. H. Vandyke	Atlanta	Fulton	1903
H. A. Vann	Boston	Thomas	1906
S. L. Vinson	Nichols	Coffee	1906
S. A. Visanska	Atlanta	Fulton	1909
Frederick Wahl	Savannah	Georgia	1900
W. J. Waits	Flovilla	Butts	1906
W. P. Waldrop	Cannon	Franklin	1909
C. E. Walker	Sycamore	Turner	1899
E. Y. Walker	Willard	Putnam	1906
J. L. Walker	Waycross	Ware	1892
N. P. Walker	Milledgeville	Baldwin	1906
O. B. Walker	Bowman	Elbert	1906
Sidney Walker	Dublin	Laurens	1906
T. D. Walker	Cochran	Ocmulgee Ass'n	1907
W. A. Walker	Cairo	Grady	1909
J. C. Wall	Eastman	Ocmulgee Ass'n	1908

NAME	POSTOFFICE	COUNTYSOCIETY	ADMITTED
F. R. Wallace	Cordele.So. Ga. Ass'n.	Dooly, Crisp	1906
M. Walton	Coffinton	Stewart	1907
R. J. Walton	Harlem	Richmond	1906
C P. Ward	Atlanta	Fulton	1905
J. A. Ward	Cordele.So. Ga. Ass'n.	Dooly, Crisp	1906
L. M. Warfield	Savannah	Georgia	1909
T. P. Waring	Savannah	Georgia	1903
W. B. Warthen	Bartow	Washington	1907
Andrew R. Watkins	Cross Keys	DeKalb	1905
J. C. Watts	Rome	Floyd	1906
A. F. Weathers	Shellman	Randolph	1906
J. D. Weaver	Eatonton	Putnam	1894
O. H. Weaver	Macon	Bibb	1899
L. L. Webb	Macon	Bibb	1906
J. B. Webb	Whigham	Grady	1909
J. L. Weddington	Dublin	Laurens	1900
W. H. Weeks	Epworth	Fannin	1909
J. Weischelbaum	Savannah	Georgia	1903
F. I. Welch	Newnan	Coweta	1909
S. A. West	Dawsonville	Forsyth	1908
G. W. Westbrook	Danielsville, R. F. D. 2.	Madison	1898
R. J. Westbrook	Danielsville, R. F. D. 2.	Madison	1906
W. F. Westmoreland	O. P., Atlanta	Fulton	1886
A. E. Wheeler	Atlanta	Fulton	1904
A. J. Whelchel	Coney...So. Ga. Ass'n.	Dooly, Crisp	1906
H. C. Whelchel	Douglas	Coffee	1900
R. L. Whipple	Cochran	Ocmulgee Ass'n	1907
Wm. H. Whipple	Macon	Bibb	1906
J. M. Whitaker	Milledgeville	Baldwin	1883
A. D. White	Pendergrass	Jackson	1905
A. F. White	Flovilla	Butts	1906
Geo. R. White	Savannah	Georgia	1902
J. C. White	Atlanta	Fulton	1906
W. M. White	Watkinsville	Oconee	1906
G. M. White	Buchanan	Haralson	1909
Seals L. Whitely	Cedartown	Polk	1907
R. H. Wicker	Rome	Floyd	1901
G. A. Wilcox	Augusta	Richmond	1896
L. W. Wiggins	Dexter	Laurens	1909
A. L. Wilkins	Eastman	Ocmulgee Ass'n	1907
D. G. Willets	Milledgeville	Baldwin	1909
L. A. Williams	Abbeville	So. Ga. Med Ass'n.	1909
B. Williams	Bonaire	Houston	1907

NAME	POST OFFICE	COUNTY SOCIETY	ADMITTED
C. L. Williams	Columbus	Muscogee	1903
F. E. Williams	Vienna	Dooly	1908
H. J. Williams, (Co., C., P.)	Macon	Bibb	1883
S. F. Williams	Cordele .So. Ga. Ass'n.	Dooly, Crisp	1908
W. J. Williams	Ellabell	Georgia	1897
W. P. Williams	Blackshear	Ware	1890
Clarence Willis	Barnesville	Pike	1908
T. J. Wills	Washington	Wilkes	1889
W. E. Wilmerding	Atlanta	Fulton	1900
B. V. Wilson	Dacula	Gwinnett	1906
L. E. Wilson	Bowden	Carroll	1907
W. S. Wilson	Savannah	Georgia	1906
J. S. Wimberly	Lumpkin, R. F. D. 4.	Stewart	1891
G. W. Wimberly	Dublin	Laurens	1909
W. R. Winchester	Macon	Bibb	1883
A. W. Winders	Savannah	Georgia	1906
B. T. Wise	Plains	Sumter	1893
Thad Wise	Plains	Sumter	1909
C. V. Wood	Cedartown	Polk	1900
J. E. Woods	Jackson	Butts	1909
W. E. Woods	Dalton	Gordon	1909
R. C. Woodard	Adel	Berrien	1906
W. D. Woods	Metter, R. F. D. 1.	Bulloch	1902
L. O. Wooten	Unadilla.So. Ga. Ass'n.	Dooly, Crisp	1897
A. R. Wright	Renfroe	Stewart	1906
H. S. Wright	Atlanta	Fulton	1904
J. C. Wright	Folkston	Ware	1906
Jno. C. Wright	Augusta	Richmond	1909
J. E. Wright	Macon	Bibb	1899
Thos. R. Wright	Augusta	Richmond	1909
Jos. B. Wright	Augusta	Richmond	1906
W. E. Yankey	Atlanta	Fulton	1908
Y. H. Yarbrough	Milledgeville	Baldwin	1908
J. R. Youmans	Columbus	Muscogee	1901
L. P. Youmans	Swainsboro	Emanuel	1901
H. D. Youmans	Lyons	Toombs	1909
S. E. Young	Midland	Muscogee	1909
Fred. Young	Toccoa	Madison	1909

HONORARY MEMBERS.

Any member for old age, length of service, or other good reason may, upon recommendation of the Board of Censors, be elected to honorary membership of his county society without dues. Such member shall be enrolled as honorary member of his county society and this Association, and shall be entitled to all the privileges of the Association.

NAME	POST-OFFICE	COUNTY SOCIETY	ADMITTED
F. E. Andrews	Clem	Carroll county.	
F. M. Brantley	Senoia	Coweta county.	
F. R. Calhoun	Cartersville	Bartow county.	
J. F. Cato	Americus	Sumter county.	
O. C. Collins	Forsyth	Monroe county.	
T. S. Dekle	Thomasville	Thomas county.	
J. E. Donahoo	Statesboro	Bulloch county.	
J. T. Ellis	Jackson	Butts county.	
T. T. Fain	Blue Ridge	Fannin county.	
W. W. Fitts	Carrollton	Carroll county.	
G. P. Folks	Waycross	Ware county.	
N. A. Fryer	Bickley	Coffee county.	
C. C. Garrett	Lithia Springs	Douglas county.	
T. H. Hall	Dublin	Laurens county.	
W. G. Ham	Gainesville	Hall county.	
J. R. Henderson	Sandersville, R.F.D. 1.	Washington county.	
John Hockenhull	Cumming	Forsyth county.	
H. C. Hodges	Oconee	Washington county.	
J. H. Jenkins	Thomasville	Thomas county.	
W. C. Kendrick	Dawson	Terrell county.	
Jno. S. Lane	Brooklet	Bulloch county.	
W. C. Lunday	Dawson, R. F. D.	Terrell county.	
W. B. Marshall	Cordele. So. Ga. Ass'n.	Dooly, Crisp counties.	
E. T. Mathis	Americus	Sumter county.	
H. A. Mettauer	Macon	Bibb county.	
S. S. L. Miller	Brooklet, R. F. D. 1.	Bulloch county.	
S. B. Mills	Sandersville, R. F. D.	Washington county.	
E. J. Morgan	Bainbridge	Decatur county.	
H. McHatton	Macon	Ocmulgee Ass'n.	
W. E. Paris	Gainesville	Hall county.	
J. P. Phillips	Clarkesville	Habersham county.	
W. M. Pitts	Thomson	McDuffie county.	
Jno. R. Price	Flippen	Washington county.	
E. J. Setze	Marietta	Cobb county.	
S. H. Smith	Culloden	Monroe. county.	
G. Tennent	Marietta	Cobb county.	
L. J. Thomas	Dublin	Laurens county.	
E. Van Goidtsnoven	Atlanta	Fulton county.	
T. D. Walker, Jr.	Cochran	Ocmulgee Ass'n.	
A. M. Winn	Lawrenceville	Gwinnett county.	

IN MEMORIAM

SPECIAL REQUEST TO EVERY MEMBER.—The Secretary *earnestly requests each member of the Association* to aid in *filling* THE BLANKS in the following Roll of Deceased Members *by making the necessary inquiries* in their respective cities and counties, *and writing him at once*, on obtaining the desired information.

NAME	POST-OFFICE	COUNTY	Admitted	Died
Adams, C. B.	Augusta	Richmond	1868	1875
Aiken, W. F.	Savannah	Chatham	1895	1900
Alexander, J. R.	Cave Spring	Floyd	1849	
Alexander, L. B.	Forsyth	Monroe	1877	1891
Alexander, J. F., (P. C., V.	Atlanta	Fulton	1849	1901
Alfriend, E. W. (V.-P.)	Albany	Dougherty	1852	1886
Armstrong, W. S.	Atlanta	Fulton	1886	1896
Armstrong, W. S.	Atlanta	Fulton	1900	1909
Arnold, R. D. (V.-P., P.)	Savannah	Chatham	1849	1876
Ashworth, A. B. (S.)	Atlanta	Fulton	1887	1889
Avary, J. C.	Decatur	DeKalb	1859	1873
Baker, A. H.	Augusta	Richmond	1876	1891
Ballinger, M. R.	Floyd Springs	Floyd	1860	1886
Banks, J. T. (V.-P., P.)	Griffin	Spalding	1858	1880
Barker, A. H.	Augusta	Richmond	1876	1891
Barkwell, T. J.	Hawkinsville	Pulaski	1859	
Barnett, J. W.	Raytown	Taliaferro	1880	1890
Battey, Robert (C., P.)	Rome	Floyd	1859	1895
Battle, H. L.	Russellville	Monroe	1849	
Beasley, I. A.	West Point	Troup	1849	1897
Bell, T. W.	Busyville	Houston	1853	
Bignon, H. A.	Augusta	Richmond	1852	1870
Billings, S. A.	Columbus	Muscogee	1855	1872
Bizzell, W. D. (V.-P.)	Atlanta	Fulton	1882	1890
Black, R. C.	Augusta	Richmond	1852	1860
Blanchard, M. D.	Columbus	Muscogee	1903	1904
Boech, E.	Atlanta	Fulton	1908	1909
Bomar, B. F.	Atlanta	Fulton	1859	
Borcheim, L. E.	Atlanta	Fulton	1886	1887
Boswell, S. J. (V.-P.)	Columbus	Muscogee	1855	

NAME	POST-OFFICE	COUNTY	Admitted	Died
Bosworth, Don B.	Atlanta	Fulton	1894	1898
Bothwell, D. J.	Vienna	Dooly	1849	
Bozeman, J. F.	Atlanta	Fulton	1855	1877
Boring, Jno. M. (V. P.)	Atlanta	Fulton	1856	1891
Boyd, Montague L.	Savannah	Chatham	1889	1897
Boyd, A. F.	Savannah	Chatham	1891	1901
Boyd, W. H.	Rome	Floyd	1903	1904
Brandon, D. S.	Thomasville	Thomas	1873	1878
Brantley, S. D.	Sandersville	Washington	1849	1897
Brawner, W. M.	Lexington	Oglethorpe	1883	1891
Broadhurst, W. W.	Augusta	Richmond	1852	1861
Brooks, C. A.	Americus	Sumter	1888	1894
Brown, S. E.	Eatonton	Putnam	1890	1896
Bruce, R. J.	Thomasville	Thomas	1874	1878
Bryans, R. G.	Jackson	Butts	1890	1894
Bunn, William	Wilna	Houston	1854	
Burgess, Wm. R. (T., O.)	Macon	Bibb	1870	1878
Burney, S. W. (P.)				1876
Burruss, L. K.	Carnesville	Franklin	1899	1901
Campbell, Robert	Augusta	Richmond	1849	1885
Callaway, Enoch	LaGrange	Troup	1895	1901
Carroll, J. C.	Laurens Hill	Laurens	1857	1879
Carroll, R. C.	Augusta	Richmond	1873	1882
Carter, C. J.	Lake Park	Lowndes	1889	1893
Carter, W. D.	Winterville	Clark	1898	1908
Castlen, F. G.	Macon	Bibb	1867	1874
Carlton, J. M.	Athens	Clarke	1882	1883
Cason, E. A.	LaGrange	Troup	1897	1897
Charlton, T. J. (C.)	Savannah	Chatham	1862	1886
Charters, W. M. (P.)	Savannah	Chatham	1851	1883
Chase, D. S.	Augusta	Richmond	1862	
Cickey, D. C.	Macon	Bibb	1894	1896
Clark, B. J.	Barnesville	Pike	1896	1898
Clark, S. B.	Rich Factory	Richmond	1852	
Campbell, H. F. (O., V.-P. P.)	Augusta	Richmond	1851	1892
Coe, J. N.	Flat Rock	Pike	1856	
Colding, C. H.	Savannah	Chatham	1882	1894
Coleman, John S.	Augusta	Richmond	1891	1892
Colley, F. S. (P.)	Monroe	Walton	1856	
Cooper, G. F. (O., S., V.-P.)	Americus	Sumter	1849	1882
Cooper, Hunter P.	Atlanta	Fulton	1894	1906
Copeland, A. B.	Hamilton	Harris	1878	1882
Cornwall, G. H.	Hillsboro	Jasper	1854	
Cortelyou, P. R.	Marietta	Cobb	1887	1902
Coursey, W. D.	Vidalia	Montgomery	1894	1898

NAME	POST-OFFICE	COUNTY	Admitted	Died
Crawford, S. S.	Augusta	Richmond	1857	
Crump, E. D.	Herndon	Burke	1872	1881
Cumming, H. M.	Augusta	Richmond	1862	1887
Cunningham, I. S.	Big Creek	Forsyth	1859	1862
Cunningham, W. D.	Jasper	Pickens	1859	1866
D'Alvigney, N.	Atlanta	Fulton		1877
Davenport, C. W.	Point Peter	Oglethorpe	1852	
Davenport, H. S.	Calhoun	Gordon	1859	
Davis, W. L.	Albany	Dougherty	1849	1874
Deadwyler, M. P. (V.-P.)	Elberton	Elbert	1868	1895
Dean, S. H.	Conyers	Rockdale	1856	
Dearing, W. E.	Augusta	Richmond	1852	1867
DeCortez, C. A.	Savannah	Chatham	1872	
DeLamar, Wyatt C.	Mountain Hill	Harris	1903	1906
Dickinson, J. T.	Albany	Dougherty	1857	
Dickinson, R. Q. (V.-P., P.)	Albany	Dougherty	1850	
Divine, K. C.	Atlanta	Fulton	1882	1899
Dobbins, W. O.	Fort Gaines	Clay	1883	1890
Dostor, B. R.	Blakely	Early	1873	1903
Dostor, B. R., Jr.	Blakely	Early	1896	1899
Doughty, Henry Campbell.	Augusta	Richmond	1896	1899
Doughty, W. H.	Augusta	Richmond	1857	1905
Dugas, L. A. (P.)	Augusta	Richmond	1852	1884
Duncan, Wm.	Savannah	Chatham	1868	1900
Dupree, L. J.	Camilla	Mitchell		1890
Engram, R. O.	Montezuma	Macon	1881	1893
Eve, Joseph A.	Augusta	Richmond	1852	1886
Eve, S. E.	Augusta	Richmond	1854	1868
Felder, W. L.	Augusta	Richmond	1857	1867
Fish, J. D. (T.)	Savannah	Chatham	1875	1879
Fitzgerald, E.	Macon	Bibb	1882	1885
Ford, DeSaussure (V.-P., C., P.)	Augusta	Richmond	1857	1905
Ford, L. D. (T.)	Augusta	Richmond	1849	1884
Fort, Moses T.	Hawkinsville	Pulaski	1859	1878
Foster, Eugene (V.-P., C., P.)	Augusta	Richmond	1875	1903
Freeman, S. H.	Dacula	Gwinnett	1891	1897
Frederick, H. F.	Hawkinsville	Pulaski	1897	1903
Franklin, M. A.	Macon	Bibb	1849	1848
Frazier, W. M.	Hawkinsville	Pulaski	1850	
Gaither, Henry	Oxford	Newton	1851	1890
Gaither, B. T.	Oxford	Newton	1852	1853
Gardner, J. W.	Augusta	Richmond	1857	
Gaston, J. McF.	Atlanta	Fulton	1884	1904
Gerdine, John	Athens	Clarke	1882	1903

NAME	POST-OFFICE	COUNTY	Admitted	Died
Gilmer, William B.	Macon	Bibb	1893	1899
Girardy, Edward	Augusta	Richmond	1852	1859
Gordon, J. M.	Savannah	Chatham	1849	
Gray, James A. (S.)	Atlanta	Fulton	1882	1887
Gray, S. H.	Barnesville	Pike	1871	1885
Green, A. B.	Pond Town	Sumter	1849	
Green, H. K.	Macon	Bibb	1849	1867
Green, Thomas F.	Milledgeville	Baldwin	1849	1879
Gregory, J. D.		Sumter	1849	
Griffin, C. F.	Cassville	Bartow	1888	1893
Griggs, A. W. (O., V.-P., C., P.)	West Point	Troup	1866	1900
Griggs, R. E.	Columbus	Muscogee	1892	1897
Grimes, T. W.	Columbus	Muscogee	1855	1882
Guerard, J. N.	Savannah	Chatham	1902	1903
Habersham, J. C.	Savannah	Chatham	1853	
Habersham, J. C. Jr., (V.-P.)	Savannah	Chatham	1866	1881
Habersham, S. E.	Eatonton	Putnam	1870	
Hagan, Hugh	Atlanta	Fulton	1892	1898
Hall, M. R.	Warrenton	Warren	1900	1904
Hallum, J. W.	Carrollton	Carroll	1891	1895
Hammond, D. W. (V.-P., C.)	Macon	Bibb	1857	1887
Harden, W. P.	Harmony Grove	Jackson	1852	1885
Hardon, V. O. (O.)	Atlanta	Fulton	1886	1904
Harrell, W. J.	Bainbridge	Decatur	1874	1881
Harris, S. N. (V.-P.)	Savannah	Chatham	1851	1854
Harris, N. O.	Atlanta	Fulton	1887	1896
Harris, Juriah (O., V.-P.)	Savannah	Chatham	1852	1876
Harrison, Gabriel	Macon	Bibb		1862
Hart, A. C.	Waynesboro	Burke	1852	
Hatch, Milo G. (C.)	Tennille	Washington	1883	1897
Hatchett, J. M.	Fort Gaines	Clay	1892	1892
Havis, M. W.	Perry	Houston	1854	1890
Hawes, E. C.	Appling	Columbia	1852	
Hawkins, A. M. F.	Ball Ground	Cherokee	1891	1903
Hawkins, S. B.	Americus	Sumter	1871	1892
Heard, T. O.	Griffin	Spalding	1867	
Hendricks, J. B.	Covington	Newton	1857	1881
Henry, G. C.	West Point	Troup	1872	
Hightower, Robt. H.	Dublin	Laurens	1899	1905
Hollis, T. B.	Bolingbroke	Monroe	1897	1901
Holt, W. F. (V.-P., P.)	Macon	Bibb	1867	1901
Hook, E. B.	Augusta	Richmond	1857	1862
Houston, J. P. R.	Savannah	Chatham	1873	1892
Howell, Dan H. (S.)	Atlanta	Fulton	1878	1899

NAME	POST-OFFICE	COUNTY	Admitted	Died
Hoxey, Thomas	Columbus	Muscogee	1849	1853
Hollingsworth, W. T.	Madison	Morgan	1857	1893
Holmes, G. W. (V.-P., P., C.)	Rome	Floyd	1867	1890
Hoyt, W. D.	Rome	Floyd	1872	1904
Holmes, T. M. (O.)	Rome	Floyd	1883	1891
Hamilton, J. L.	Stone Mountain	DeKalb	1859	1890
Hunter, E. H. W.	Louisville	Jefferson	1867	1883
Hurt, C. D. (C.)	Atlanta	Fulton	1890	1906
Hynds, Robt. W.	Atlanta	Fulton	1905	1905
Ingraham, E. P.	Albany	Dougherty	1870	1873
Irvin, Robert	Augusta	Richmond	1880	1881
Jeffords, H. M.	Sylvester	Worth	1904	1909
Johnson, C. W.	Macon	Bibb	1870	1875
Johnson, John M.	Atlanta	Fulton	1866	1886
Joiner, W. W.	Hawkinsville	Pulaski	1897	1900
Jones, B. O.	Atlanta	Fulton		
Jones, J. W.	Atlanta	Fulton	1857	1871
Jowers, Clebe	Americus	Sumter	1897	1897
Kennedy, L. P.	Atlanta	Fulton	1890	1892
Kennebrew, Henry	Athens	Clarke	1883	1886
Kirkscey, E. J. (V.-P.)	Columbus	Muscogee	1871	1877
Kollock, P. M. (P.)	Savannah	Chatham	1852	1872
Lamar, T. R. (V.-P.)	Macon	Bibb	1849	1859
Lockhart, R. H.	Columbus	Muscogee	1855	1859
Lanier, S. J.	Mt. Airy	Habersham	1890	1902
Lattimer, C. T.	Macon	Bibb	1889	1889
Lawrence, L. L.	Blountsville	Jones	1889	1890
Le Conte, Jos.	Berkeley	California	1849	1901
LeHardy, J. C. (T., V.-P., P.)	Savannah	Chatham	1868	1906
Leitner, C. B.	Columbus	Muscogee	1852	1897
Lightfoot, W. S.	Macon	Bibb	1849	1864
Long, Crawford W.	Athens	Clarke	1849	1878
Logan, J. P. (P.)	Atlanta	Fulton	1858	1891
Love, Wm. Abram (V.-P.)	Atlanta	Fulton	1866	1898
Lumpkin, George	Maxey's Depot	Oglethorpe	1859	
Lumpkin, S. P.	Watkinsville	Clarke	1859	
Mack, Alexander	Decatur	DeKalb	1897	1905
Mackie, J. D.	Augusta	Richmond	1852	1854
Maddox, W. D.	Monticello	Jasper	1849	
Laffit, R. G. W.	Dalton	Whitfield	1859	
Martin, J. D.	Savannah	Chatham	1894	1898
Matthews, S. M.	Quitman	Brooks	1900	1901
Matthews, W. B.	Fort Valley	Houston	1884	1885
McBride, W. G.	Oconee	Washington	1850	1873
McDowell, J. M.	Barnesville	Pike	1887	1891

NAME	POST-OFFICE	COUNTY	Admitted	Died
McGolrick, R.	Macon	Bibb	1849	1853
McKinley, C. A.	Newnan	Coweta	1859	
McMillen, J. E.	Columbus	Muscogee	1872	1883
McMaster, H. B.	Waynesboro	Burke	1888	1909
Means, A. (V.-P.)	Oxford	Newton	1851	1883
Means, O. S.	Oxford	Newton	1857	
Means, W. A.	Hendrix	Upson	1899	1900
Meniere, Wm. S.	Madison	Morgan	1857	
Milam, R. J.	Fairburn	Campbell	1882	1882
Miller, H. V. M.	Atlanta	Fulton	1851	1896
Moran, C. A.	Atlanta	Fulton	1895	1903
Morgan, E.	Arlington	Calhoun	1902	1905
Morrison, D. H.	Savannah	Chatham	1868	1869
Mull, Joseph C.	Shannon	Floyd	1902	1906
Mulligan, G. W. (V.-P., P.)	Washington	Wilkes	1883	1897
Musgrove, W. C. (C., S.)	Midville	Burke	1849	1876
Nash, R. A.	Marion	Twiggs	1849	
Nesbit, D. B.	Eatonton	Putnam	1894	1900
Nesbit, R. H.	Eatonton	Putnam	1854	1873
Noell, S. G.	Ypsilanti	Talbot	1892	1892
Nottingham, C. B. (S., T., C. P.)	Macon	Bibb	1849	1875
Nunn, R. M.	Savannah	Chatham	1871	1873
O'Daniel, Wm. (T., P.)	Bullard	Twiggs	1870	1900
O'Daniel, Wm. A. (O.)	Bullards	Twiggs	1886	1906
Ogilby, H. J. (V.-P.)	Madison	Morgan	1849	1873
O'Keefe, D. C. (S.)	Atlanta	Fulton	1852	1871
O'Quinn, John H.	Patterson	Pierce	1908	
Orme, L. H. (S.)	Atlanta	Fulton	1866	1872
Owen, J. D.		Baldwin	1850	
O'Sullivan	Cork	Lee	1849	
Parsons, J. M.	Russellville	Monroe		
Peete, C. H.	Macon	Bibb	1893	1908
Perdue, H.	Barnesville	Pike	1889	1896
Philpot, W. H.	Talbotton	Talbot	1857	1905
Pitts, G. W.	Star	Butts	1859	
Pittman, S. S.	Chipley	Harris	1900	1900
Poore, J. J.	Monroe	Walton	1894	1896
Pope, N. O.	Atlanta	Fulton	1900	1904
Posey, J. F.	Savannah	Chatham	1851	
Powell, T. S. (V.-P.)	Atlanta	Fulton	1857	1896
Pringle, W.	Covington	Newton		
Pritchard, J. E.	Resaca	Gordon	1905	1906
Quillian, D. D.	Athens	Clarke	1892	1906
Quarterman, K. A.	Walthourville	Liberty	1885	
Ragan, Isham H.	Palmyra	Lee	1856	
Raines, Thomas	Atlanta	Fulton	1872	1883
Raines, T. L.	Atlanta	Fulton	1882	1884

NAME	POST-OFFICE	COUNTY	Admitted	Died
Rauschenberg, Christian	Atlanta	Fulton	1861	1878
Richardson, C. P.	Savannah	Chatham	1851	1853
Ridley, R. A. T. (V.-P.)	LaGrange	Troup	1859	1871
Robertson, J. J.	Washington	Wilkes	1852	1872
Robinson, G. P.	Atlanta	Fulton	1899	1902
Robison, W. R.	Milledgeville	Baldwin	1896	1904
Roddy, R. L. (V.-P.)	Forsyth	Monroe	1849	1878
Roy, G. G.	Atlanta	Fulton	1878	1901
Rudisill, B. F.	Forsyth	Monroe	1887	1901
Ruffin, W. R.	Augusta	Richmond	1852	
Russell, W. J.	Lawrenceville	Gwinnett	1861	
Ryan, T. D. L.	Hawkinsville	Pulaski	1859	1876
Stafford, S. J.	Madison	Morgan	1856	1859
Searcy, D. B.	Bolingbroke	Monroe	1849	1885
Shropshire, J. W.			1871	
Simmons, J. N.	Atlanta	Fulton	1850	1871
Simmons, J. S.	Gainesville	Hall	1873	1881
Simmons, S. B.	Augusta	Richmond	1852	1867
Simmons, T. A.	Irwinton	Wilkinson	1871	1871
Slaughter, T. J.	Villa Rica		1851	1889
Smith, A. D.	Montezuma	Macon	1871	
Smith, C. W.	Jonesboro	Clayton	1859	
Smith, Hiram	Augusta	Richmond	1876	1888
Smith, H. H.	Augusta	Richmond	1886	1887
Smith, R. M. (C.)	Athens	Clarke	1879	
Smith, Thomas	Savannah	Chatham	1858	1876
Spier, W. A.	Grantville	Coweta	1859	
Stallings, J. D.	Preston	Webster	1871	
Stanford, F. A.	Columbus	Muscogee	1849	1885
Starr, E. P.	Savannah	Chatham	1868	1873
Steele, H.	Knoxville	Crawford	1849	
Steele, R. T.	Fairburn	Campbell	1849	
Steiner, H. H.	Augusta	Richmond	1857	1892
Stevens, W. B.	Forsyth	Monroe	1849	
Sterling, W. L.	Atlanta	Fulton	1878	1894
Stewardson, Thomas	Savannah	Chatham	1849	
Stone, Geo. H.	Savannah	Chatham	1875	1899
Stovall, G. M.	Elberton	Elbert	1894	1894
Stozier, L. L.	Albany	Dougherty	1867	
Strother, W. A.	Albany	Dougherty	1867	1896
Sullivan, J. S.	Macon	Bibb	1893	1908
Sutton, C. B.		Lee	1856	
Taliaferro, V. H. (V.-P.)	Atlanta	Fulton	1857	1887
Taylor, E. T.	Columbus	Muscogee	1855	
Taylor, J. P.	Haralson	Coweta	1859	1897

NAME	POST-OFFICE	COUNTY	Admitted	Died
Taylor, R. N.	Hawkinsville	Pulaski	1850	
Thomas, J. G. (V.-P., P., C., T.)	Savannah	Chatham	1867	1885
Thompson, Chas.	Macon	Bibb	1849	1854
Thompson, Wm. L.	Pitts	Wilcox	1897	1898
Trammel, A. A.	Forsyth	Monroe	1856	
Trippe, R. J.	Cartersville	Bartow	1904	1909
Tucker, O. W.	Brunswick	Glynn	1890	1891
Tyson, J. D.	Adrian	Emanuel	1893	1904
Underwood, J. B.	Cave Spring	Floyd	1866	1881
Van Meter, J. N.	Euharlee	Bartow	1879	1881
Wall, C. D.	Columbus	Muscogee	1899	1900
Wall, W. W.	Calhoun	Gordon	1869	
Walker, T. F.	Cochran	Pulaski	1858	1888
Walker, F.	Macon	Bibb	1889	1898
Ware, A. E. O.			1859	
Warring, J. J.	Savannah	Chatham	1853	1888
Watson, W. A.	Jefferson	Jackson	1883	1889
Watson, G. B.	Acree	Worth	1897	1897
Wells, C. H.	Savannah	Chatham	1853	1854
Wells, W. B.	Chattanooga	Tennessee	1873	1891
Wells, Charles (P.)	Perry	Houston	1849	
West, C. W.	Savannah	Chatham	1853	1859
West, J. N.	Toccoa	Habersham	1901	1903
Westmoreland, W. F. (P.)	Atlanta	Fulton	1856	1890
Wethington, R. T.	Thomasville	Thomas	1884	1887
Whaley, W. S.	Athens	Clarke	1900	1903
White, S. G. (V.-P.)	Milledgeville	Baldwin	1868	1871
Whitehead, A. G. (V.-P., P.)	Waynesboro	Burke	1861	1904
Whitlock, Isaac W.	Washington	Wilkes	1852	1853
Wile, Henry	Atlanta	Fulton	1886	1887
Wiley, J. B.	Macon	Bibb	1849	
Williams, T. L.		Dooly	1849	
Williams, W. L.	Fayetteville	Fayette	1873	
Willingham, Willis	Lexington	Oglethorpe	1849	1872
Winchester, E. A.	DeSoto	Sumter	1893	1897
Winn, G. A.	Bolingbroke	Monroe	1849	1862
Wirsen, G. F.	Rutledge	Morgan	1871	1884
Woodson, C. T.	Wilna	Houston	1854	
Wooten, W. H.	Lexington	Oglethorpe	1852	1860
Word, T. J.	Rome	Floyd	1887	1890
Word, R. C.	Atlanta	Fulton	1855	1890
Wragg, J. A.	Savannah	Chatham	1853	
Wright, P. H.	Macon	Bibb	1869	1888
Yearwood, J. K.	San Luis Potosi	Mexico	1901	1902
Yonge, Easton	Savannah	Chatham	1880	

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